Date (mmm dd yyyy)	Issued For	Rev.
09-21-2007	TITLE 1 60% REVIEW	A
10-24-2007	TITLE 1 100% COMPLETE	B
12-07-2007	TITLE II DESIGN 30% REVIEW SUBMITTAL	C
03-28-2008	TITLE II DESIGN 60% REVIEW SUBMITTAL	D
07-31-2008	TITLE II DESIGN 90% REVIEW SUBMITTAL	E
08-25-2008	TITLE II DESIGN 100% OWNER REVIEW	F
02-19-2009	TITLE II CONSTRUCTION BID ISSUE	0

SPECIAL STRUCTURAL INSPECTION SCHEDULE

ESTABLISHED PER BCNYS 2007

ITEM	CONTINUOUS 2	PERIODIC 2	COMMENTS
PRE-FABRICATED CONSTRUCTION (BCNYS 1704.2)			SEE NOTES 4 & 7
STEEL CONSTRUCTION (BCNYS 1704.3)			SEE BCNYS TABLE 1704.3
SHOP AND FIELD WELDING			SEE NOTES 4 & 10
SINGLE PASS FILLET WELD ≤ 5/16"		•	SEE NOTE 5
FILLET WELDS > 5/16"	•		SEE NOTE 5
MULTI-PASS FILLET WELD	•		SEE NOTE 5
PARTIAL & COMPLETE PENETRATION WELDS	•		SEE NOTE 6
LIGHT GAUGE METAL FRAMING WELDING		•	
FLOOR AND ROOF DECK FASTENING		•	
WELDING OF ANCHORS & STUDS		•	
WELDING STAIRS & RAILING SYSTEMS		•	
INSPECTION OF STEEL FRAME JOINT DETAILS		•	
EMBEDDED PLATES		•	
HIGH STRENGTH BOLTING (BCNYS 1704.3.3)			
VERIFY MATERIALS OF NUTS, BOLTS & WASHERS		•	
BEARING TYPE CONNECTIONS		•	
SLIP-CRITIAL CONNECTIONS		•	SEE NOTE 14
CONCRETE CONSTRUCTION (BCNYS 1704.4)			SEE BCNYS TABLE 1704.4 AND NOTE 11
REINFORCING STEEL PLACEMENT		•	
EMBEDDED BOLTS & PLATES	•		
VERIFYING REQUIRED DESIGN CONCRETE MIX		•	
CONCRETE PLACEMENT & SAMPLING	•		
CURING TEMPERATURE & TECHNIQUES		•	
EPOXY & EXPANSION ANCHOR PLACEMENT	•		SEE NOTE 9
MASONRY CONSTRUCTION (BCNYS 1704.5)			SEE BCNYS TABLE 1704.5.1 (ENG & NON-ESSENTIAL)
SITE PREPARED MORTAR		•	
MORTAR JOINTS		•	
REINFORCEMENT & CONNECTORS		•	
INSPECTION SHALL VERIFY			
SIZE & LOCATION OF STRUCTURAL ELEMENTS		•	
TYPE, SIZE & LOCATION OF ANCHORS		•	
SIZE, GRADE & TYPE OF REINFORCEMENT		•	
HOT OR COLD WEATHER PROTECTION		•	
CLEAN GROUT SPACE PRIOR TO GROUTING		•	
GROUT PLACEMENT		•	
TEST SPECIMENS & PRISMS		•	
SOILS (BCNYS 1704.7)			SEE NOTE 12
SITE PREPARATION		•	
PLACEMENT OF FILL		•	SEE NOTE 13
IN-PLACE DENSITY		•	
FINAL FOUNDATION PREPARATION		•	

NOTES:

1. THE ITEMS MARKED WITH A "•" IN THE SPECIAL INSPECTION SCHEDULE SHALL BE INSPECTED IN ACCORDANCE WITH BCNYS CHAPTER 17 BY A CERTIFIED SPECIAL INSPECTOR FROM AN ESTABLISHED TESTING AGENCY. FOR MATERIAL SAMPLING AND TESTING REQUIREMENTS, REFER TO THE MATERIAL SAMPLING AND TESTING SECTION, THE PROJECT SPECIFICATIONS AND THE SPECIFIC GENERAL NOTES SECTIONS. THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE OWNER'S REPRESENTATIVE AND CONTRACTOR. ANY ITEMS WHICH FAIL TO COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF DISCREPANCIES ARE NOT CORRECTED THEY SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE PRIOR TO COMPLETION OF THAT PHASE OF THE WORK. SPECIAL INSPECTION TESTING REQUIREMENTS APPLY EQUALLY TO ALL CONTRACTOR DESIGNED COMPONENTS. REFER TO BCNYS TABLE 1704.1 FOR SPECIAL INSPECTOR QUALIFICATIONS.
2. CONTINUOUS SPECIAL INSPECTION MEANS THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. PERIODIC SPECIAL INSPECTION MEANS THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECAIL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT COMPLETION OF THE WORK (REFERENCE BCNYS SECTION 1702)
3. CONTINUOUS SPECIAL INSPECTION IS ALWAYS REQUIRED DURING THE PERFORMANCE OF THE WORK UNLESS SPECIFICALLY NOTED IN THE SPECIAL INSPECTION SCHEDULE
4. SPECIAL INSPECTION IS NOT REQUIRED FOR WORK PERFORMED BY AN APPROVED FABRICATOR PER BCNYS SECTION 1704.2.2
5. ALL WELDS SHALL BE VISUALLY INSPECTED IN ACCORDANCE WITH BCNYS SECTION 1704.3
6. ALL COMPLETE PENETRATION WELDS SHALL BE TESTED ULTRASONICALLY OR BY USING ANOTHER APPROVED METHOD (BCNYS SECTION 1708.4) IN ACCORDANCE WITH BCNYS SECTION 1704.3
7. INSPECTION FOR PRE-FABRICATED CONSTRUCTION SHALL BE THE SAME AS IF THE THE MATERIAL USED IN THE CONSTRUCTION TOOK PLACE ON SITE. CONTINUOUS INSPECTION WILL NOT BE REQUIRED DURING PRE-FABRICATION IF THE APPROVED TESTING AGENCY CERTIFIES THE CONSTRUCTION AND FURNISHES EVIDENCE OF COMPLIANCE
8. ANY CONSTRUCTION OR MATERIAL THAT HAS FAILED INSPECTION SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT
9. EPOXY AND EXPANSION ANCHORS INTO MASONRY OR CONCRETE MAY BE USED ONLY WHEN APPROVED BY ENGINEER USING AN APPROVED PRODUCT WITH CURRENT PUBLISHED ICC RESEARCH REPORT NUMBERS
10. WELDING INSPECTIONS SHALL BE IN COMPLIANCE WITH AWS D1.1
11. SPECIAL INSPECTION IS NOT REQUIRED FOR CONCRETE USED FOR ISOLATED SPREAD FOOTINGS, CONTINUOUS FOOTINGS, NON-STRUCTURAL SLABS, FOUNDATION WALLS, PATIOS, DRIVEWAYS AND SIDEWALKS PROVIDED THE REQUIREMENTS OF BCNYS 1704.4 ARE MET
12. SPECIAL INSPECTION OF SOILS SHALL REFERENCE THE APPROVED GEOTECHNICAL REPORT TO DETERMINE COMPLIANCE
13. SPECIAL INSPECTIONS ARE NOT REQUIRED DURING PLACEMENT OF FILL LESS THAN 12 INCHES DEEP
14. SLIP-CRITICAL CONNECTIONS MAY HAVE PERIODIC SPECIAL INSPECTION PROVIDED THAT THE TURN-OF-NUT METHOD WITH MATCHMARKING TECHNIQUE IS USED
15. OWNER'S DESIGNATED FIRM FOR SPECIAL STRUCTURAL INSPECTIONS AND MATERIAL TESTING: TBD
16. OWNER'S DESIGNATED FIRM FOR STRUCTURAL OBSERVATIONS: GIFFELS INC.

WIND DESIGN LOADS

- BCNYS 2007
- BROOKHAVEN NATIONAL LABORATORY-E&CS-100G STRUCTURAL DESIGN CRITERIA

BASIC WIND SPEED (V) 120 MPH (MAX 3 SEC GUST)
WIND LOAD IMPORTANCE FACTOR (Iw) 1.0
EXPOSURE CATEGORY C
(WITHIN HURRICANE PRONE REGION)
INTERNAL PRESSURE COEF (GCpi) +/- 0.18
ANALYSIS PROCEDURE - ANALYTICAL PROCEDURE
WIND BASE SHEAR: N-S DIRECTION = ±80 KIPS
E-W DIRECTION = ±200 KIPS

1. BUILDING MAIN WIND-FORCE RESISTING SYSTEMS

WALL PRESSURE (SEE NOTES)

	WINDWARD WALL	LEEWARD WALL	SIDEWALL
0'-15'	23.8 PSF	19.2 PSF	24.6 PSF
20'	24.9 PSF	19.2 PSF	24.6 PSF
25'	25.9 PSF	19.2 PSF	24.6 PSF
30'	26.6 PSF	19.2 PSF	24.6 PSF
40'	28.0 PSF	19.2 PSF	24.6 PSF

ROOF PRESSURE (SEE NOTES)

ROOF FOR WIND NORMAL TO RIDGE		ROOF FOR WIND PARALLEL TO RIDGE	
0'-H/2	-33.8 PSF	0'-H/2	-33.8 PSF
H/2-H	-24.6 PSF	H/2-H	-24.6 PSF
H-2H	-24.6 PSF	H-2H	-24.6 PSF
>2H	-24.6 PSF	>2H	-24.6 PSF

2. BUILDING COMPONENTS AND CLADDING

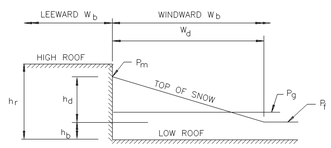
	WALLS			ROOF			
	WINDWARD	LEEWARD		WINDWARD	LEEWARD		
EFFECTIVE WIND AREA	ALL ZONES	INTERIOR ZONES	END ZONES	ALL ZONES	INTERIOR ZONES	EDGE ZONES	CORNER ZONES
10 SQ.FT.	37.5	-40.7	-50.2	15.3	-37.5	-63	-63
20 SQ.FT.	35.8	-39.0	-46.9	14.3	-36.6	-56.3	-56.3
50 SQ.FT.	33.6	-36.8	-42.4	13.0	-35.3	-47.4	-47.4
100 SQ.FT.	31.9	-35.1	-39.0	12.1	-34.3	-40.7	-40.7
200 SQ.FT.	30.2	-33.4	-35.6	12.1	-34.3	-40.7	-40.7
500 SQ.FT.	28.0	-31.2	-31.2	12.1	-34.3	-40.7	-40.7
1000 SQ.FT.	28.0	-31.2	-31.2	12.1	-34.3	-40.7	-40.7

NOTES:
1. VALUES LISTED INCLUDE INTERNAL PRESSURE OF 5.7 PSF
2. UPLIFT AND LEEWARD PRESSURES BASED ON MEAN ROOF HEIGHT H = 35 FT

SNOW DESIGN LOADS

- BCNYC 2007
- BROOKHAVEN NATIONAL LABORATORY-E&CS-100G STRUCTURAL DESIGN CRITERIA

GROUND SNOW LOAD (Pg) 45 PSF
FLAT ROOF SNOW LOAD (Pf) 31.5 PSF
SNOW DENSITY 19.9 PCF
SNOW EXPOSURE FACTOR (Ce) 1.0
SNOW LOAD IMPORTANCE FACTOR (Is) 1.0
THERMAL FACTOR (Ct) 1.0



DRIFTING SNOW LOADS - FLAT ROOFS

- BCNYC 2007
- BROOKHAVEN NATIONAL LABORATORY-E&CS-100G STRUCTURAL DESIGN CRITERIA

Is: SNOW IMPORTANCE FACTOR = 1.0
Ct: THERMAL FACTOR = 1.0
Ce: EXPOSURE FACTOR = 1.0
D: DENSITY OF SNOW = 19.9 PCF
h_b: HEIGHT OF BALANCED SNOW LOAD ON LOWER ROOF = 1.6 FT
h_d: MAXIMUM HEIGHT OF DRIFT SURCHARGE (FT)
h_r: DIFFERENCE IN HEIGHT BETWEEN THE HIGH AND LOW ROOF (FT)
P_f: BALANCED FLAT ROOF SNOW LOAD = 31.5 PSF
Pg: GROUND SNOW LOAD = 45.0 PSF
Pm: MAXIMUM INTENSITY OF SNOW LOAD (PSF)
W_b: HORIZONTAL DIMENSION OF HIGH ROOF (FT), NOT LESS THAN 25 FT
W_d: WIDTH OF SNOW DRIFT (FT)

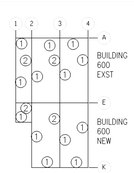
LEEWARD $h_d = .43\sqrt[3]{W_b}\sqrt[4]{Pg + 10} - 1.5$ BUT SHALL NOT EXCEED $(hr - h_b)$

WINDWARD $h_d = 3/4\,(.43\sqrt[3]{W_b}\sqrt[4]{Pg + 10} - 1.5)$

$W_d = 4h_d$ BUT SHALL NOT EXCEED $4(h_r - h_b)$

$Pm = D\,(h_d + h_b)$ BUT SHALL NOT EXCEED Dhr

DRIFT LOCATION	h_d (FT)	W_d (FT)	P_m (PSF)
AREA 1	0.08	0.33	33.1
AREA 2	1.92	7.2	69.7



B-600 DRIFTING SNOW AREA - KEY PLAN

BUILDING CODE

- BUILDING CODE OF NEW YORK STATE 2007 (BCNYS 2007)
- BROOKHAVEN NATIONAL LABORATORY-E&CS-100G STRUCTURAL DESIGN CRITERIA

ROOF DESIGN LOADS

LIVE LOAD	31.5 PSF
1 1/2" (18 GAGE) METAL DECK	3 PSF
ROOFING & INSULATION	7 PSF
UTILITIES	15 PSF
BEAMS	5 PSF
MISCELLANEOUS	0 PSF
SUB TOTAL	61.5 PSF
GIRDERS	4 PSF
SUB TOTAL	65.5 PSF
COLUMNS	2 PSF
TOTAL	67.5 PSF

BLDG 600 ELECTRICAL MEZZANINE FLOOR FRAMING DESIGN LOADS

LIVE LOAD	250 PSF
6" CONC ON 1 1/2" (18 GAGE) METAL DECK	70 PSF
UTILITIES	5 PSF
STEEL FRAMING	5 PSF
TOTAL	330 PSF

BLDG 600 OPERATING FLOOR FRAMING DESIGN LOADS

LIVE LOAD	300 PSF
6" CONC ON 1 1/2" (18 GAGE) METAL DECK	70 PSF
UTILITIES	45 PSF
STEEL FRAMING	10 PSF
TOTAL	425 PSF

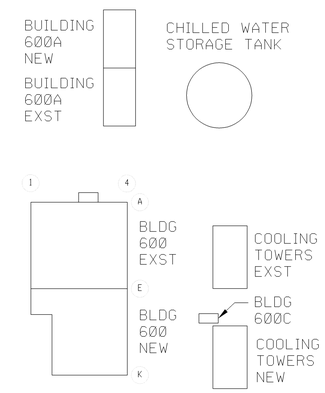
SEISMIC DESIGN LOADS

- BCNYS 2007
- BROOKHAVEN NATIONAL LABORATORY-E&CS-100G STRUCTURAL DESIGN CRITERIA

SHORT PERIOD MCE ACCEL (Ss)	26.4 %g
1 SEC PERIOD MCE ACCEL (S1)	8.0 %g
SHORT PERIOD DESIGN ACCEL (Sds)	27.9 %g
1 SEC PERIOD DESIGN ACCEL (Sd1)	12.8 %g
SITE CLASS	D
SEISMIC LOAD IMPORTANCE FACTOR (Ie)	1.0
SEISMIC USE GROUP	I
SEISMIC DESIGN CATEGORY	B
SEISMIC FORCE RESISTIING SYSTEM	ORDINARY STEEL CONCENTRICALLY BRACED FRAMES (OCBF) - EAST-WEST DIRECTION ECCENTRICALLY BRACED STEEL FRAMES (EBF) - NORTH-SOUTH DIRECTION
RESPONSE MODIFICATION FACTOR (R)	3
DEFLECTION AMP FACTOR (Cd)	3
ANALYSIS PROCEDURE	EQUIV LATERAL FORCE

SEISMIC BASE SHEAR IN N-S AND E-W DIRECTIONSN = ±54.0 KIPS
(FROM ELEVATED FLOORS)

NOTES:
1. FOR GENERAL NOTES REFER TO DWG S-001



KEY PLAN
NO SCALE
NORTH

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JOB NO	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA
		△					

BROOKHAVEN NATIONAL LABORATORY
UNDER CONTRACT WITH
UNITED STATES DEPARTMENT OF ENERGY
PLANT ENGINEERING DIVISION
UPTON, NEW YORK 11973

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Approved By: W KUSSRO
Project Manager: G. KAPLAN
Project Engineer/Architect: S MUDDAPPA
Project No. SF070003

JOB TITLE: CENTRAL CHILLED WATER FACILITY PHASE II			DWG. TITLE: BLDG 600 STRUCT DESIGN LOADS	
ILR,GPP,LNI, HEM	DATE		ACCT. NO.	SHEET OF
SCALE: AS NOTED	DWN. BY: JD	REV'D BY: WK	JOB NO.: 11705	DWG. NO. S-002
ESHQ RISK LEVEL	APP'D. BY: WK		BLDG. NO.: 600	
PATH:				