APPLICABLE CODES	
2009 ICC INTERNATIONAL BUILDING CODE (IBC)	
2009 NFPA 101 LIFE SAFETY CODE (LSC)	
2011 NFPA 45 LIFE SAFETY CODE STANDARD ON FIRE PROTECTION FOR LABORATORIES	
USE AND OCCUPANCY	
USE GROUP	BUSINESS, B (IBC 304.1, LSC 3.3.178.3) STORAGE, MODERATE HAZARD S-1 (IBC 311.2, LSC 3.3.178.15) SPECIAL PURPOSE INDUSTRIAL (LSC 3.3.178.8) ASSEMBLY, A-3 (IBC 303.1, LSC 3.3.178.2) (NOTE 1)
SMALL ASSEMBLY USES	OCCUPANCY OF A ROOM BY FEWER THAN 50 PERSONS FOR ASSEMBLY PURPOSES IS CLASSIFIED AS BUSINESS AND PROTECTED AS SUCH (IBC 303.1 EXCEPTION 2, LSC 6.1.2.1).
LAB UNIT CLASSIFICATION	CLASS C (NFPA 45 TABLE 5.1.1)
FIRE RATED CONSTRUCTION	
CONSTRUCTION CLASSIFICATION PROPOSED	TYPE IIB (NOTE 2) (IBC 504 AND 506, LSC TABLE 12.1.6)
REQUIRED FIRE RATED CONSTRUCTION	(IBC TABLE 601)
· STRUCTURAL FRAME	0 HOUR
· BEARING WALLS	0 HOUR
· NONBEARING WALLS	0 HOUR
· FLOOR CONSTRUCTION	0 HOUR
· ROOF CONSTRUCTION	0 HOUR
· OCCUPANCY SEPARATIONS	0 HOUR
· CONTROL AREAS	1 HOUR
MEANS OF EGRESS (FULLY SPRINKLER PROTECTED BUILDING)	
OCCUPANT LOAD FACTOR	(IBC TABLE 1004.1.1, LSC TABLE 7.3.1.2)
· OFFICES: BUSINESS, B	100 SF / OCCUPANT (GROSS)
· CIRCULATION: BUSINESS, B	100 SF / OCCUPANT (GROSS)
· LABS: SPECIAL PURPOSE INDUSTRIAL (LSC) / BUSINESS, B (IBC)	100 SF / OCCUPANT (GROSS)
· CONFERENCE ROOMS: ASSEMBLY, A-3 (UNCONCENTRATED)	15 SF / OCCUPANT (NET)
· CONFERENCE ROOMS: ASSEMBLY, A-3 (CONCENTRATED)	7 SF / OCCUPANT (NET)
· BREAKROOMS: ASSEMBLY, A-3	15 SF / OCCUPANT (NET)
· MECHANICAL / ELECTRICAL / STORAGE: STORAGE, S-1	300 SF / OCCUPANT (GROSS)
EXIT CAPACITY FACTORS	(IBC 1005.1, LSC TABLE 7.3.3.1)
· LEVEL COMPONENTS (DOOR WAYS, RAMPS)	0.2-INCH / OCCUPANT
· VERTICAL COMPONENTS (STAIRS)	0.3-INCH / OCCUPANT
TRAVEL DISTANCE	(IBC TABLE 1016.1, LSC TABLE A.7.6)
· BUSINESS, B	300 FEET
· SPECIAL PURPOSE INDUSTRIAL	400 FEET
· ASSEMBLY, A-3	250 FEET
· MECHANICAL / ELECTRICAL / STORAGE: STORAGE, S-1	400 FEET
COMMON PATH OF TRAVEL	(IBC 1014.3, LSC TABLE A.7.6)
· BUSINESS, B	100 FEET
· SPECIAL PURPOSE INDUSTRIAL	100 FEET
· ASSEMBLY, A-3	75 FEET
· MECHANICAL / ELECTRICAL / STORAGE: STORAGE, S-1	100 FEET
DEAD-ENDS	(IBC 1018.4, LSC TABLE A.7.6)
· BUSINESS, B	50 FEET
· SPECIAL PURPOSE INDUSTRIAL	50 FEET
· ASSEMBLY, A-3	20 FEET
· MECHANICAL / ELECTRICAL / STORAGE: STORAGE, S-1	50 FEET

NOTE: [1] PER THE IBC, THE LARGE CONFERENCE ROOM (0114) IS CLASSIFIED AS AN ACCESSORY OCCUPANCY SINCE IT OCCUPIES LESS THAN 10 PERCENT OF THE AREA OF THE BUILDING.
[2] SEE THE ALLOWABLE HEIGHT AND AREA CALCUALTION FOR FURTHER CLARIFICATION.

ALLOWABLE HEIGHT CALCULATION[1,2] TYPE IIB UNPROTECTED, NONCOMBUSTIBLE	BUSINESS USE GROUP B	STORAGE[3] USE GROUP S-1
TABULAR HEIGHT	3 STORIES / 55 FT	2 STORIES / 55 FT
SPRINKLER INCREASE (1 STORY/20 FEET)	1 STORY / 20 FT	1 STORY / 20 FT
TOTAL ALLOWABLE HEIGHT BY USE GROUP	4 STORIES / 75 FT	3 STORIES / 75 FT
MAXIMUM ANTICIPATED PER USE GROUP	1 STORY / LESS THAN 75 FT	1 STORY / LESS THAN 75 FT

ALLOWABLE AREA CALCULATION[1,2,3] TYPE IIB UNPROTECTED, NONCOMBUSTIBLE	BUSINESS USE GROUP B	STORAGE[3] USE GROUP S-1
TABULAR AREA	23,000 SQ FT	17,500 SQ FT
SPRINKLER INCREASE (300%)	69,000 SQ FT	52,500 SQ FT
FRONTAGE INCREASE (74%)	17,020 SQ FT	12,950 SQ FT
TOTAL ALLOWABLE AREA PER FLOOR	109,020 SQ FT	82,950 SQ FT
MAXIMUM ANTICIPATED PER FLOOR	55,500 SQ FT	55,500 SQ FT

NOTES: [1] INDUSTRIAL OCCUPANCIES HAVE NO MINIMUM CONSTRUCTION REQUIREMENTS (LSC 40.1.6).
[2] PER THE IBC, THE CONFERENCE ROOM HAS BEEN CLASSIFIED AS AN ACCESSORY OCCUPANCY (AND THEREFORE PART OF THE BUSINESS OCCUPANCY) SINCE IT OCCUPIES LESS THAN 10 PERCENT OF THE BUILDING AREA. THE LSC DOES HAVE CONSTRUCTION REQUIREMENTS FOR ASSEMBLY OCCUPANCIES, HOWEVER THE BUILDING COMPLIES WITH THE CONSTRUCTION LIMITATIONS OF LSC TABLE 12.1.6 FOR TYPE II(000) CONSTRUCTION.
[3] SHADING INDICATES THE MOST RESTRICTIVE OCCUPANCY TO WHICH THE BUILDING HAS BEEN DESIGNED.

ROOM NUMBER	USE	AREA (SF)	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
101A	MECHANICAL / ELECTRICAL / STORAGE	40	300 GROSS	1
101B	RESTROOM	57	100 GROSS	1
101C	RESTROOM	58	100 GROSS	1
101D	COFFEE BAR	97	15 NET	7
177	MECHANICAL / ELECTRICAL / STORAGE	96	300 GROSS	1
173	RESTROOM	451	100 GROSS	5
174	RESTROOM	449	100 GROSS	5
175	MECHANICAL / ELECTRICAL / STORAGE	79	300 GROSS	1
178B	ELEVATOR MACHINE ROOM	56	300 GROSS	1
178C	MECHANICAL / ELECTRICAL / STORAGE	59	300 GROSS	1
180	LOADING DOCK	413	300 GROSS	2
181	MECHANICAL / ELECTRICAL / STORAGE	38	300 GROSS	1
183	RECYCLING GARBAGE HOLDING	59	300 GROSS	1
185	MECHANICAL / ELECTRICAL / STORAGE	229	300 GROSS	1
186	MECHANICAL / ELECTRICAL / STORAGE	560	300 GROSS	2
187	MECHANICAL / ELECTRICAL / STORAGE	1,587	300 GROSS	6
191	MECHANICAL / ELECTRICAL / STORAGE	135	300 GROSS	1
192	MECHANICAL / ELECTRICAL / STORAGE	89	300 GROSS	1
193	MECHANICAL / ELECTRICAL / STORAGE	105	300 GROSS	1
194E	LAB	223	100 GROSS	3
195E	MECHANICAL / ELECTRICAL / STORAGE	401	300 GROSS	2
C100	CORRIDOR	293	100 GROSS	3
C101	CORRIDOR	6,887	100 GROSS	69
C103	CORRIDOR	231	100 GROSS	3
C104	CORRIDOR	239	100 GROSS	3
C106	CORRIDOR	509	100 GROSS	6
C105	CORRIDOR	1,026	100 GROSS	11
L001	LAB	2,055	100 GROSS	21
L002A	LAB	1,498	100 GROSS	15
L002B	LAB	1,075	100 GROSS	11
L002E	LAB	214	100 GROSS	3
L003	LAB	101	100 GROSS	2
L003E	LAB	209	100 GROSS	3
L004	LAB	91	100 GROSS	1
L004E	MECHANICAL / ELECTRICAL / STORAGE	917	300 GROSS	4
L005	LAB	91	100 GROSS	1
L005E	LAB	212	100 GROSS	3
L006	LAB	110	100 GROSS	2
L006E	LAB	213	100 GROSS	3
L007E	LAB	445	100 GROSS	5
L008	LAB	213	100 GROSS	3
L009	LAB	653	100 GROSS	7
L010	LAB	1,104	100 GROSS	12
L011	LAB	97	100 GROSS	1
L012	LAB	112	100 GROSS	2
L014	LAB	217	100 GROSS	3
L015	LAB	322	100 GROSS	4
L017	LAB	323	100 GROSS	4
L018	LAB	210	100 GROSS	3
L019	LAB	212	100 GROSS	3
L021	LAB	432	100 GROSS	5
L022	LAB	2,653	100 GROSS	27
L025	LAB	213	100 GROSS	3
L027	LAB	668	100 GROSS	7
L029	LAB	231	100 GROSS	3
L030	LAB	2,670	100 GROSS	27
L031	LAB	213	100 GROSS	3
L032	LAB	320	100 GROSS	4
L033	LAB	106	100 GROSS	2
L034	LAB	214	100 GROSS	3
L035	LAB	211	100 GROSS	3
L036	LAB	214	100 GROSS	3
O169E2	OFFICE	115	100 GROSS	2
O170E2	OFFICE	119	100 GROSS	2

ROOM NUMBER	USE	AREA (SF)	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
L037	LAB	211	100 GROSS	3
L038	LAB	213	100 GROSS	3
L039	LAB	116	100 GROSS	2
L041	LAB	113	100 GROSS	2
L042	LAB	227	100 GROSS	3
L043	LAB	467	100 GROSS	5
L044	LAB	229	100 GROSS	3
L045	LAB	116	100 GROSS	2
L046	LAB	354	100 GROSS	4
L047	LAB	468	100 GROSS	5
O101	ADMINISTRATION	299	100 GROSS	3
O102	OFFICE	253	100 GROSS	3
O103	CONFERENCE	104	15 NET	7
O104	CONFERENCE	178	15 NET	12
O105	OFFICE	110	100 GROSS	2
O106	OFFICE	117	100 GROSS	2
O107	OFFICE	115	100 GROSS	2
O108	OFFICE	201	100 GROSS	3
O109	OFFICE	116	100 GROSS	2
O110	OFFICE	111	100 GROSS	2
O111	OFFICE	833	100 GROSS	9
O112	OFFICE	114	100 GROSS	2
O113	OFFICE	109	100 GROSS	2
O114	CONFERENCE	2,230	7 NET	319
O115	MECHANICAL / ELECTRICAL / STORAGE	444	300 GROSS	2
O116	MECHANICAL / ELECTRICAL / STORAGE	13	300 GROSS	1
O117	MECHANICAL / ELECTRICAL / STORAGE	14	300 GROSS	1
O118	MECHANICAL / ELECTRICAL / STORAGE	22	300 GROSS	1
O119	MECHANICAL / ELECTRICAL / STORAGE	33	300 GROSS	1
O120	OFFICE	111	100 GROSS	2
O121	OFFICE	115	100 GROSS	2
O122	OFFICE	202	100 GROSS	3
O123	OFFICE	115	100 GROSS	2
O124	OFFICE	115	100 GROSS	2
O125	OFFICE	117	100 GROSS	2
O126	OFFICE	115	100 GROSS	2
O127	OFFICE	198	100 GROSS	2
O128	OFFICE	114	100 GROSS	2
O129	OFFICE	119	100 GROSS	2
O130	OFFICE	1,152	100 GROSS	12
O140	BREAKROOM	466	15 NET	32
O150	CONFERENCE	112	15 NET	8
O151	OFFICE	116	100 GROSS	2
O152	OFFICE	202	100 GROSS	3
O153	OFFICE	114	100 GROSS	2
O154	OFFICE	114	100 GROSS	2
O155	OFFICE	115	100 GROSS	2
O156	OFFICE	115	100 GROSS	2
O157	OFFICE	200	100 GROSS	2
O158	CONFERENCE	239	15 NET	16
O159	OFFICE	1,126	100 GROSS	12
O160	OFFICE	116	100 GROSS	2
O161	OFFICE	114	100 GROSS	2
O162	OFFICE	111	100 GROSS	2
O163	OFFICE	116	100 GROSS	2
O163E	OFFICE	115	100 GROSS	2
O164	OFFICE	115	100 GROSS	2
O164E	OFFICE	116	100 GROSS	2
O165	OFFICE	113	100 GROSS	2
O165E2	OFFICE	115	100 GROSS	2
O166	OFFICE	2,131	100 GROSS	22
O166E2	OFFICE	115	100 GROSS	2
O167E2	OFFICE	115	100 GROSS	2
O168E2	OFFICE	200	100 GROSS	2

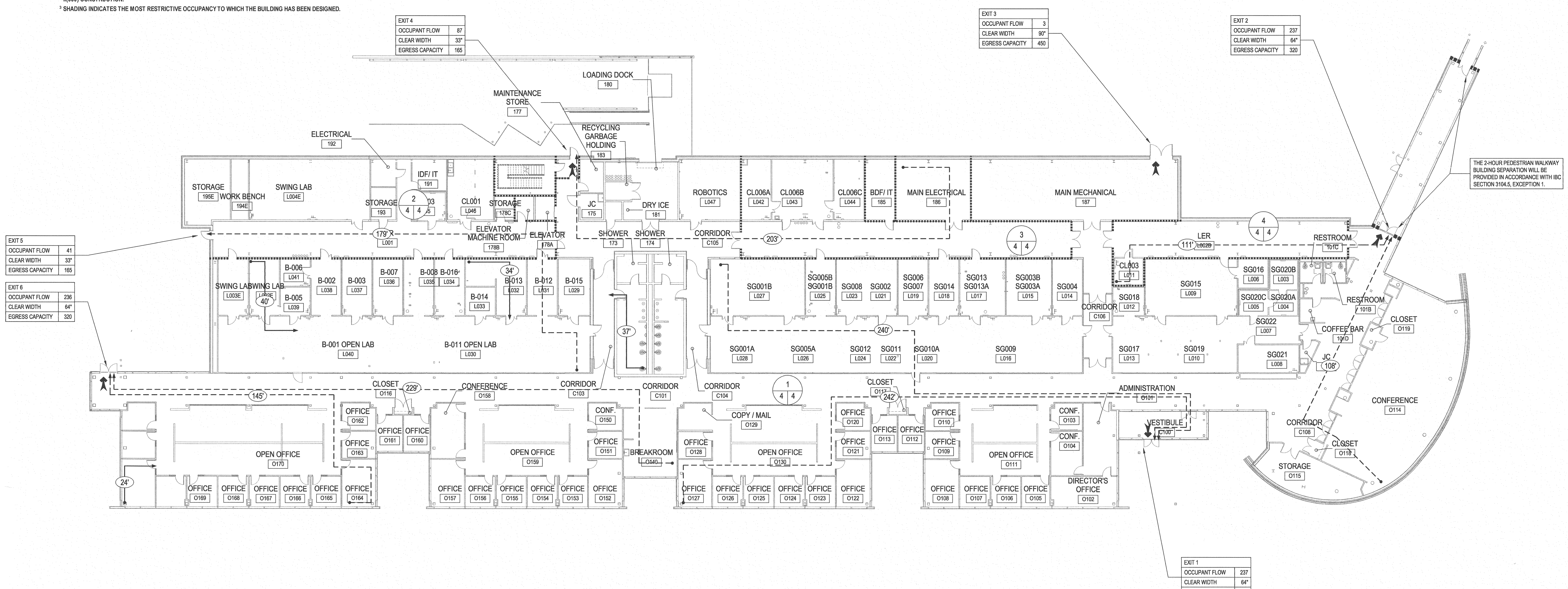
SYMBOL KEY

- EXIT FLOW
- 2-HOUR FIRE BARRIER
- 1-HOUR FIRE BARRIER
- 000' TRAVEL DISTANCE
- 000' COMMON PATH OF EGRESS TRAVEL
- 000' DEAD END DISTANCE
- X / Y Z — X: CONTROL AREA IDENTIFICATION; Y: ALLOWABLE CONTROL AREAS PER FLOOR; Z: ACTUAL CONTROL AREAS PER FLOOR

NOTE: THE PENTHOUSE IS NOT CONSIDERED A CONTROL AREA.

SCOPE ENHANCEMENT 1 LEVEL 1 OCCUPANT LOAD CALCULATION			
USE	OCCUPANT LOAD FACTOR	AREA (S.F)	OCCUPANT LOAD
OFFICE, B	100 GROSS	9,875	99
MECHANICAL/ELECTRICAL/STORAGE, S-1	300 GROSS	3,912	14
BREAKROOM/CONFERENCE ROOM, A-3	15 NET	571	39
LAB SPACE, B	100 GROSS	21,214	213
LARGE CONFERENCE ROOM	7 NET	2,449	350
CIRCULATION, B	100 GROSS	12,510	126
	TOTAL =	50,531	841

EXIT CAPACITY:		
EXIT 1	=	320
EXIT 2	=	320
EXIT 3	=	450
EXIT 4	=	165
EXIT 5	=	165
EXIT 6	=	320
TOTAL	=	1,740



01 LEVEL LIFE SAFETY PLAN

SCALE: 1/16" = 1'-0"

DATE: 06/26/12
FIRE PROTECTION ENGINEER OF RECORD:
VICTOR L. DUBROWSKI, PE
LICENSE NO. PE-022726
CODE CONSULTANTS, INC.
2043 WOODLAND PKWY, SUITE 300
ST. LOUIS, MO 63146-4235
PHONE: 314-991-2633
CORPORATE CERTIFICATE OF AUTHORITY NO. 000419

STATE OF MISSOURI — VICTOR L. DUBROWSKI — NUMBER PE-022726 — PROFESSIONAL ENGINEER
6-26-12

THIS IS A REPRESENTATION OF THE DESIGN CONCEPT.

IT SHOULD NOT BE CONSIDERED A DEFINITIVE PLAN FOR THE EXACT LOCATION OF THE PROTECTION FEATURES REPRESENTED. SEE THE APPROPRIATE PLANS FOR THE SPECIFIC DISCIPLINE FOR THE EXACT LOCATIONS.

CODE CONSULTANTS, INC.
2043 WOODLAND PKWY, SUITE 300
ST. LOUIS, MISSOURI 63146-4235
314-991-2633
www.codeconsultants.com
110378.00.000

SMITHGROUP
architecture engineering interiors planning
SMITHGROUP, INC
35 EAST WACKER
SUITE 2200
CHICAGO, IL 60601
T 312.641.0770
F 312.641.6728
www.smithgroup.com

JJR landscape architecture, planning, urban design, civil engineering, environmental science
JJR, LLC
35 EAST WACKER DRIVE
SUITE 2200
CHICAGO, ILLINOIS 60601
312.641.0510 T
312.641.0668 F
www.jjr-us.com

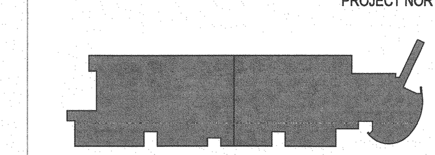
Affiliated Engineers
Affiliated Engineers, Inc.
5802 Research Park Boulevard
Madison, Wisconsin 53719
Tel 608.238.2616 Fax 608.238.2614

TERRA ENGINEERING LTD.
225 West Ohio Street, 4th Floor
Chicago, Illinois 60654
T:(312)467-0123 F:(312) 467-0220

Thornton Tomasetti
Thornton Tomasetti, Inc.
330 N. Wabash Avenue, Suite 1500
Chicago IL 60611-7622
T 312.596.2000 F 312.596.2001

SEALS AND SIGNATURES

KEYPLAN



PROJECT NORTH

REV. NO.	DESCRIPTION	BY	APVD	DATE
0	ISSUED FOR CONSTRUCTION			07/03/12

Argonne NATIONAL LABORATORY

FMS
Facilities Management Services

PROJECT TITLE: ADVANCED PROTEIN CRYSTALLIZATION FACILITY, ARGONNE NATIONAL LABORATORY

PROJECT NO: 22378.000

DRAWING TITLE: 01 LEVEL LIFE SAFETY PLAN

DESIGNED ENC	A/E CADD FILE	FACILITY NO(S)
DRAWN PSB	A/E DWG. NO.	
CHECKED VLD	CAD NO:	
PROJECT MANAGER	DWG STATE	
DATE - 07/03/12	BIND ORDER	
FACILITY DOCUMENT NUMBER J446-101-W-	LS2.1.0	REV. NO.

Plot Date: 7/13/2011 10:55:15 AM

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