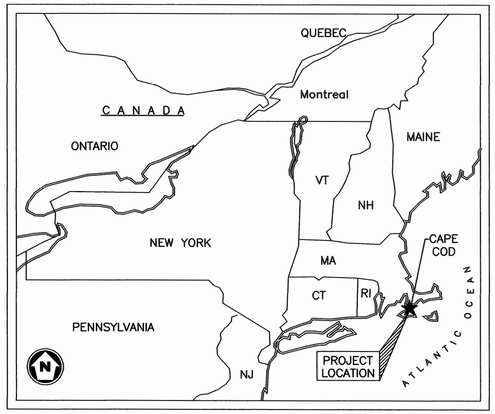
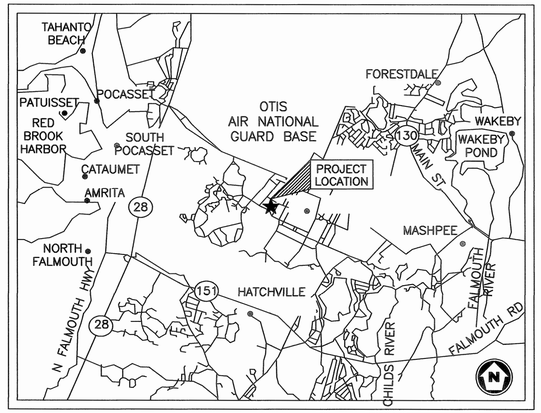
U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICES

OTIS AIR NATIONAL GUARD BASE
BOURNE, MA
CONTRACT NO. AG-32KW-C-08-0019



LOCATION MAP
NO SCALE



VICINITY MAP
SCALE: NONE

SITE MAP
SCALE: NONE

GRAPHIC SYMBOLS

A1 / SHT — INDICATES ELEVATION LETTER AND NUMBER
INDICATES SHEET WHERE ELEVATION IS SHOWN
EXTERIOR ELEVATION

A1 / SHT — INDICATES SECTION LETTER AND NUMBER
INDICATES SHEET WHERE SECTION IS SHOWN
SECTION

A1 / SHT — INDICATES DETAIL LETTER AND NUMBER
AREA OF DETAIL
INDICATES SHEET WHERE DETAIL IS SHOWN
DETAIL

F / A601 — INDICATES DESIGNATION ON SCHEDULE
INDICATES SHEET WHERE SCHEDULE IS LOCATED
SCHEDULE TAG

SYMBOLS & ABBREVIATIONS

APPROX	APPROXIMATELY	H_2O	WATER
BLDG	BUILDING	INT	INTERIOR
CMU	CONCRETE MASONRY UNIT	LF	LINEAR FEET
CONC.	CONCRETE	MAX	MAXIMUM
DET.	DETAIL	MIN	MINIMUM
DWG(S)	DRAWING, DRAWINGS	N.I.C.	NOT IN CONTRACT
EA.	EACH	±	PLUS/MINUS
EXT	EXTERIOR	PH	PHASE
FAC	FACILITY	SF	SQUARE FEET
F.F. EL	FINISH FLOOR ELEVATION	SIM.	SIMILAR
GOV.	GOVERNMENT	T.O.	TOP OF
		TYP	TYPICAL

100% DESIGN SUBMITTAL
NOT FOR CONSTRUCTION

DRAWING LIST

	DRAWING TITLE	SHEET NO.
G-001	TITLE SHEET, LIST OF DRAWINGS, GENERAL NOTES, LEGEND	1 OF 11
C-101	SITE PLAN	2 OF 11
F-101	FOUNDATION PLAN AND SECTIONS	3 OF 11
A-101	FLOOR AND CEILING PLAN	4 OF 11
A-201	SECTIONS AND ELEVATIONS	5 OF 11
A-301	DETAILS AND EQUIPMENT SCHEDULES	6 OF 11
P-100	PLUMBING AND PIPING PLAN	7 OF 11
E-1	ELECTRICAL NOTES & LEGEND	8 OF 11
E-2	ELECTRICAL SCHEDULES	9 OF 11
E-3	LIGHTING & POWER PLAN	10 OF 11
E-4	WIRING DIAGRAM	11 OF 11

PRELIMINARY NOT FOR CONSTRUCTION

SYM	DESCRIPTION	DATE	/ BY

T&L CONSTRUCTION, INC.
PLAN CHECK NUMBER 2007-2-20000
TYPE: NEW BUILDING
AE LOGO

SEAL
DES | DRW

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICES
OTIS ANG BASE
BOURNE, MASSACHUSETTS
GREENHOUSE COVER SHEET

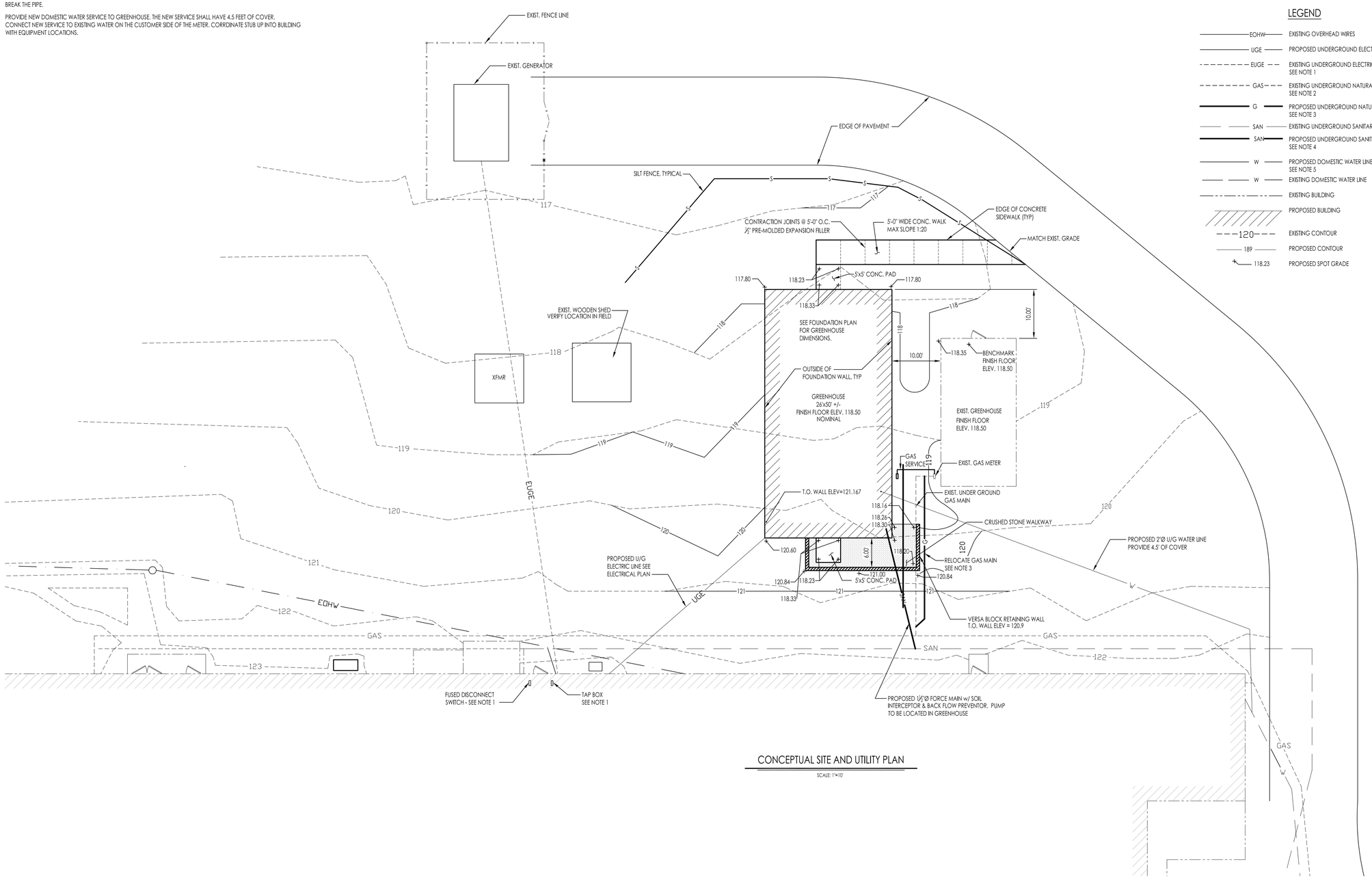
CODE ID. NO. 80091 | SIZE ANSI D
SCALE:
WORK ORDER NO. –
CONSTR. CONTR. NO. –
DRAWING NO. G-001
SHEET 1 OF 11

DRAWFORM REVISION: 01 MAY 2006

REVDATE: FILE NAME: Y:\CONSTRUCTION PROJECTS\Job # 176 - USDA D-B Greenhouse\Z-CAD_PS176\GH Cover.dwg LAYOUT NAME: Cover PLOTTED: Monday, May 18, 2009 - 9:53am

NOTES:

1. PROVIDE NEW UNDERGROUND ELECTRIC SERVICE AS SHOWN ON ELECTRICAL DRAWINGS.
2. CORRDINATE THE WORK AROUND THE EXISTING NATURAL GAS LINE WITH THE UTILITY OWNER. PROVIDE COVER OVER THE GAS SERVICE AS REQUIRED BY THE UTILITY OWNER.
3. PROVIDE AN UNDERGROUND GAS SERVICE TO THE NEW GREENHOUSE. CONNECT THE NEW SERVICE TO THE CUTOMER SIDE OF THE EXISTING METER. VERIFY THE GAS SERVICE CAPACITY WITH THE UTILITY OWNER.
4. PROVIDE A NEW SANITARY SEWER FORCE MAIN FROM GREENHOUSE TO THE EXISTING SANITARY SEWER. CONNECT THE NEW LINE TO THE EXISTING UTILIZING FITTINGS APPROPRIATE FOR THE PIPING MATERIAL. CUT THE EXISTING PIPE. DO NOT BREAK THE PIPE.
5. PROVIDE NEW DOMESTIC WATER SERVICE TO GREENHOUSE. THE NEW SERVICE SHALL HAVE 4.5 FEET OF COVER. CONNECT NEW SERVICE TO EXISTING WATER ON THE CUSTOMER SIDE OF THE METER. CORRDINATE STUB UP INTO BUILDING WITH EQUIPMENT LOCATIONS.



CONCEPTUAL SITE AND UTILITY PLAN

SCALE: 1"=10'

LEGEND

EOHW	EXISTING OVERHEAD WIRES
UGE	PROPOSED UNDERGROUND ELECTRIC LINES
EUGE	EXISTING UNDERGROUND ELECTRIC LINES - SEE NOTE 1
GAS	EXISTING UNDERGROUND NATURAL GAS SEE NOTE 2
G	PROPOSED UNDERGROUND NATURAL GAS SEE NOTE 3
SAN	EXISTING UNDERGROUND SANITARY
SAN	PROPOSED UNDERGROUND SANITARY SEE NOTE 4
W	PROPOSED DOMESTIC WATER LINE SEE NOTE 5
W	EXISTING DOMESTIC WATER LINE
	EXISTING BUILDING
	PROPOSED BUILDING
120	EXISTING CONTOUR
189	PROPOSED CONTOUR
118.23	PROPOSED SPOT GRADE

SYM	DESCRIPTION	DATE	APPR
0	ISSUED FOR CONSTRUCTION	03-11-09	CBC

T&S CONSTRUCTION, INC
17 JAMES STREET, SUITE 200
FITCHBURG, MASSACHUSETTS
PH: 978-342-2782

Colby Company
Structural Engineering
P.O. Box 746
Fitchburg, MA 01420
978-342-2782 Fax 978-342-2783
colbycompany@verizon.net

AE LOGO

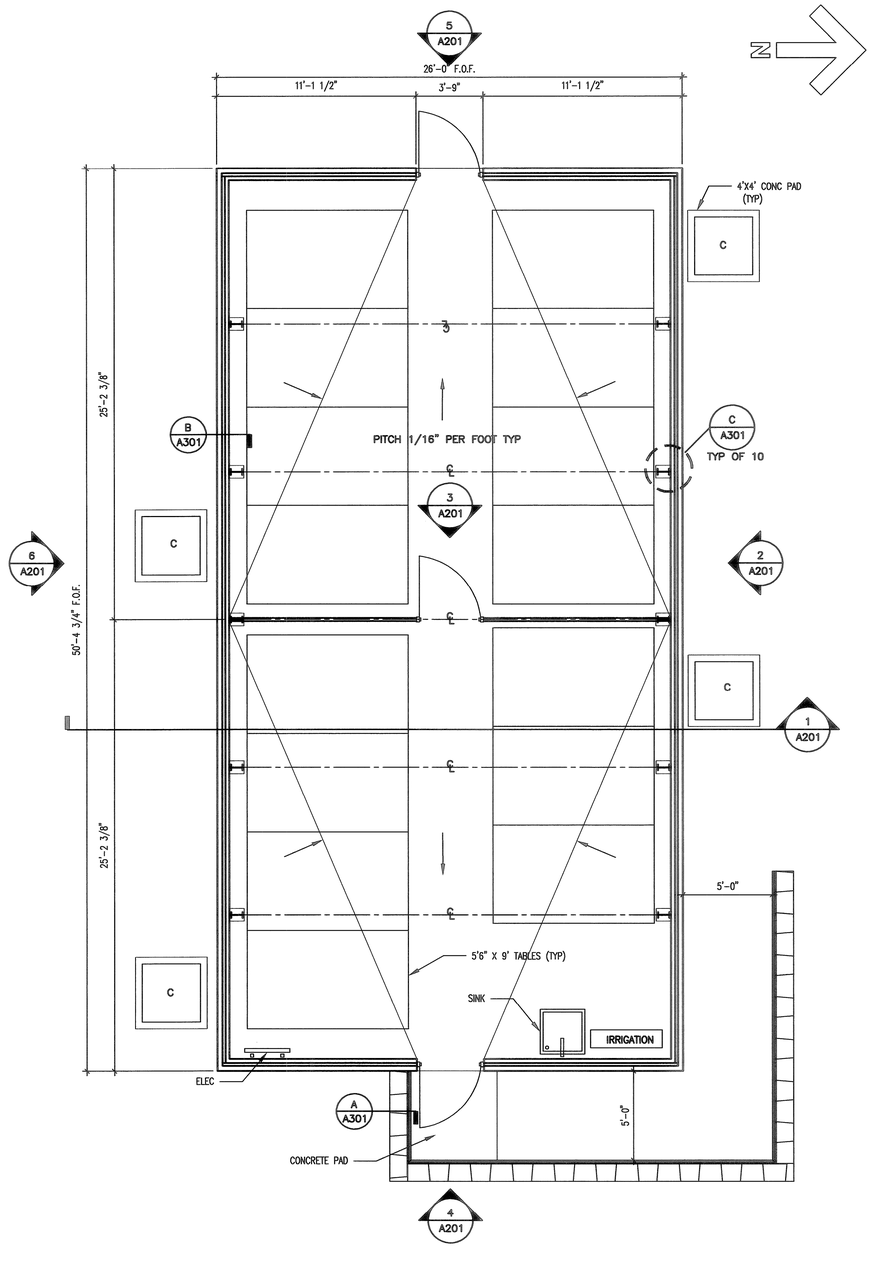
COMMONWEALTH OF MASSACHUSETTS
CALEN B. COLBY
STRUCTURAL
NO. 47783
REGISTERED PROFESSIONAL ENGINEER
03-10-09
SEAL

DSN BJB DRW BJB
CBC

U.S DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICES
OTIS ANG BASE
BOURNE, MASSACHUSETTS
GREENHOUSE
SITE PLAN

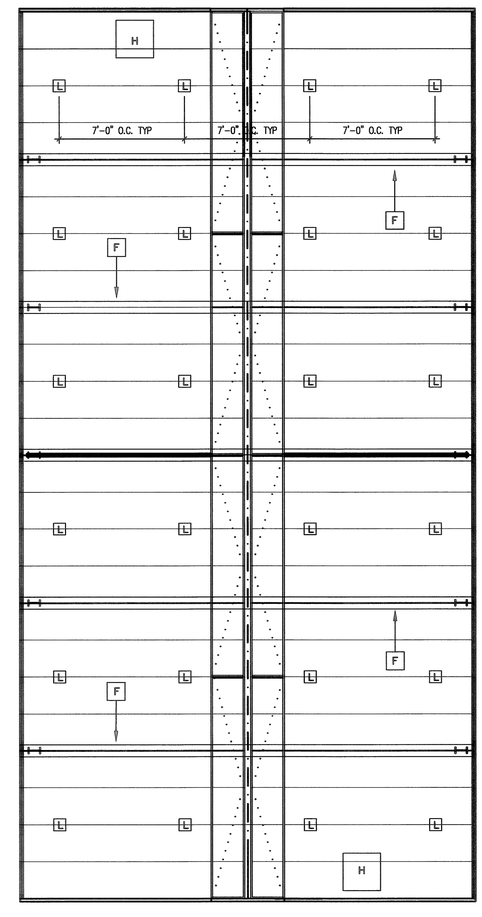
CODE ID. NO. 80091 SIZE ANSI D
SCALE:
WORK ORDER NO. –
CONSTR. CONTR. NO. –
DRAWING NO. C–101
SHEET OF

DRAWFORM REVISION: 01 MAY 2006



FLOOR PLAN (1)

SCALE: 1/4" = 1'-0"



REFLECTED CEILING PLAN (2)

SCALE: 1/4" = 1'-0"

KEY
H – HEATER UNIT
C – COOLING UNIT
L – LIGHT
F – FAN

PRELIMINARY NOT FOR CONSTRUCTION

SYM	DESCRIPTION	DATE	APPR

P&S CONSTRUCTION, INC.
33 JOHN STREET, SUITE 200
LOWELL, MA. 01851
978-454-9000

AE LOGO

REGISTERED ARCHITECT
ROBERT F. BURKE
No. 3041
BOXFORD, MAINE
COMMONWEALTH OF MASSACHUSETTS

SEAL

DES | DRW

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICES

GREENHOUSE
FLOOR AND CEILING PLANS

CODE ID. NO. 80091 | SIZE ANSI D

SCALE:

WORK ORDER NO.

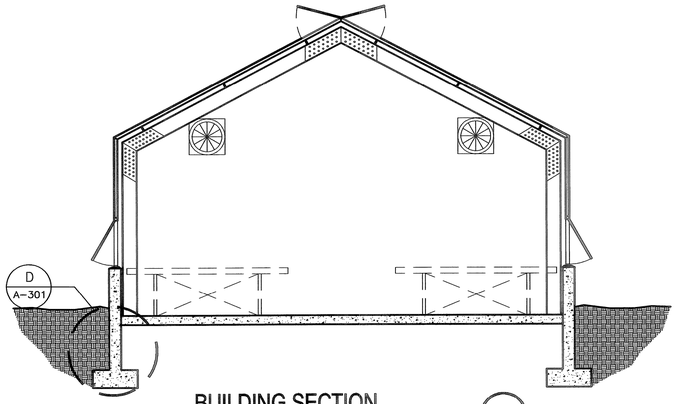
CONSTR. CONTR. NO.

DRAWING NO. A-101

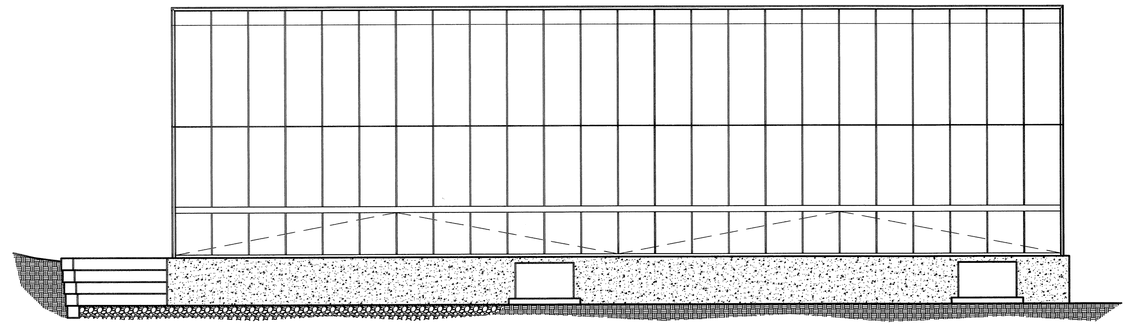
SHEET 4 OF 11

DRAWFORM REVISION: 01 MAY 2006

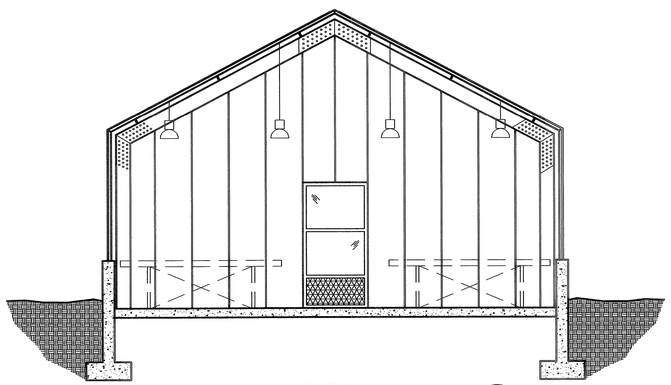
REV/DATE: FILE NAME: Y:\CONSTRUCTION PROJECTS\Job # 176 – USDA D-B Greenhouse\Z-CAD_PS\176\GH Plan.dwg LAYOUT NAME: Layout3-Layout1 PLOTTED: Monday, May 18, 2009 – 9:54am



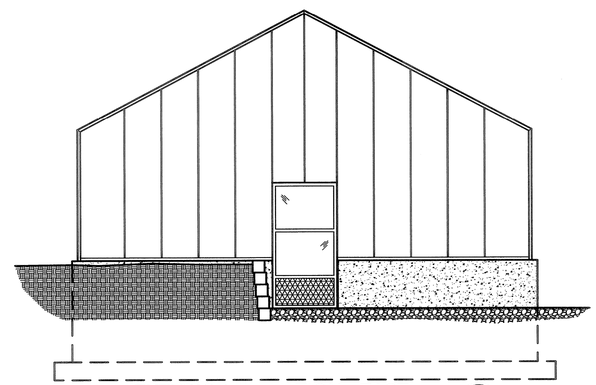
BUILDING SECTION (1)
SCALE: 1/4" = 1'-0"



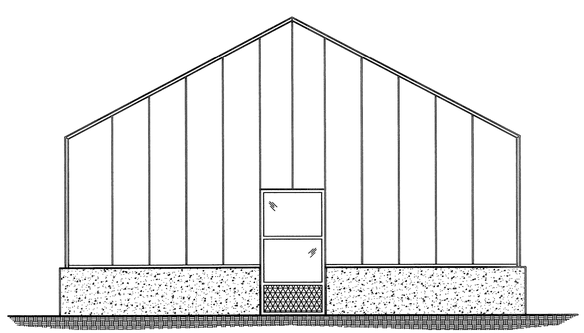
EXTERIOR ELEVATION - NORTH (2)
SCALE: 1/4" = 1'-0"



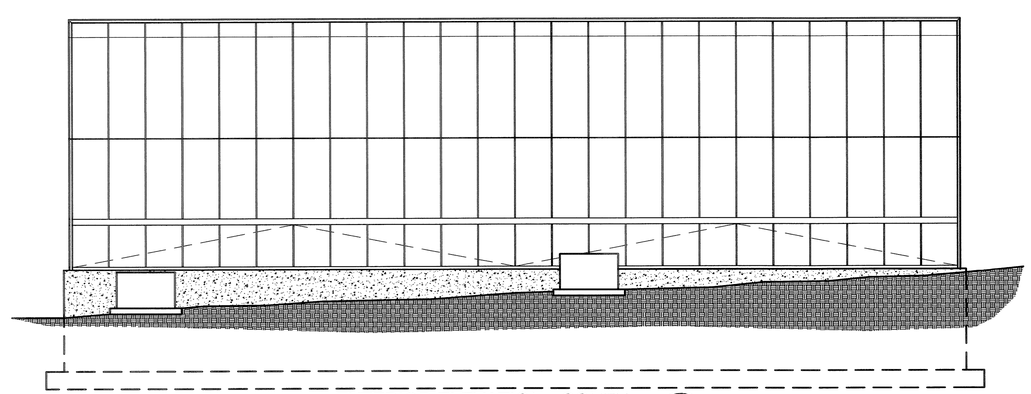
BUILDING SECTION (3)
SCALE: 1/4" = 1'-0"



EXTERIOR ELEVATION - EAST (4)
SCALE: 1/4" = 1'-0"



EXTERIOR ELEVATION - WEST (5)
SCALE: 1/4" = 1'-0"



EXTERIOR ELEVATION - SOUTH (6)
SCALE: 1/4" = 1'-0"

REVDATE: FILE NAME: Y:\CONSTRUCTION PROJECTS\Job # 176 - USDA D-B Greenhouse\Z-CAD_FS176\GH Section.dwg LAYOUT NAME: Section PLOTTED: Monday, May 18, 2009 - 9:55am

REVDATE

SYM	DESCRIPTION	DATE	APPR

PRELIMINARY
NOT FOR CONSTRUCTION

USDA

T.A.S. CONSTRUCTION, INC.
P.O. BOX 370, 1 ELLIS STREET, EAST
BOURNE, MASSACHUSETTS 02532
(T) 508-759-5700 (F) 508-759-5704
AE LOGO

REGISTERED ARCHITECT
RODNEY F. BURKE
No. 3041
COMMONWEALTH OF MASSACHUSETTS
5/21/09
SEAL

DES | DRW

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICES

OTIS ANG BASE
BOURNE, MASSACHUSETTS

GREENHOUSE
SECTIONS & ELEVATIONS

CODE ID. NO. 80091 | SIZE ANSI D
SCALE: –
WORK ORDER NO. –
CONSTR. CONTR. NO. –
DRAWING NO. A-201
SHEET 5 OF 11

ELECTRICAL LEGEND

LIGHT OUTLET AND FIXTURE - LETTER REFERS TO FIXTURE SCHEDULE

F	FLUORESCENT OR LINEAR INCANDESCENT FIXTURE
C,R OR P	INCANDESCENT, FLUORESCENT, OR H.I.D. FIXTURE
W	WALL MOUNTED FIXTURE
	DIRECTIONALLY ORIENTATED FIXTURE
OR	FIXTURE WIRED TO NORMAL/EMERGENCY CIRCUIT OR FIXTURE EQUIPPED WITH INTEGRAL EMERGENCY BATTERY UNIT
NL	FIXTURE WIRED TO NIGHT LIGHTING CIRCUIT
	EXIT SIGN – SINGLE FACE DOUBLE FACE – DIRECTIONAL ARROWS AS INDICATED

WIRING DEVICES - SWITCHES 20A, 120/277V. M.H. 48" TO C EXCEPT AS NOTED

S	SINGLE POLE
S2	DOUBLE POLE
S3	THREE WAY
S4	FOUR WAY
S	SINGLE POLE SWITCH WITH THERMAL ELEMENT
D	DIMMER SWITCH – 600W–120V. (UNLESS NOTED OTHERWISE) LINEAR SLIDE BAR TYPE
FL D	DIMMER SWITCH – FLOURESCENT RATED – LINEAR SLIDE BAR TYPE
SMC	MAINTAINED CONTACT–THREE POSITION–CENTER OFF–SINGLE POLE–DOUBLE THROW
S	SPEED SWITCH – FURNISHED BY HVAC CONTRACTOR – INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR
SD	DOOR OPERATED SWITCH

WIRING DEVICES - OCCUPANCY SENSORS

S	WALL MOUNTED – PASSIVE INFRARED, 120/277V RATED, MANUAL OVERIDE, WHITE FINISH – UNENCO #SOM101
S_2	DUAL CIRCUIT WALL MOUNTED – PASSIVE INFRARED, 120/277V RATED, MANUAL OVERIDE, WHITE FINISH – UNENCO #SOM102
S_{CLG}	FLUSH CEILING MOUNTED – PASSIVE INFRARED, 120/277V RATED, WHITE FINISH – UNENCO #PIR10
ST	WALL MOUNTED – DIGITAL COUNT DOWN TIMER, 120/277V RATED, MANUAL OVERIDE (FIELD SET DIP SWITCHES AT 2 HOURS), WHITE FINISH – UNENCO #TD200

WIRING DEVICES - RECEPTACLES 20A, 125V, GROUNDING TYPE. M.H. 18" TO C A.F.F. (EXCEPT AS NOTED)

	DUPLEX – WALL MOUNTED
	DOUBLE DUPLEX
GFI	DUPLEX – GROUND FAULT INTERRUPTER TYPE – WITH LED TYPE INDICATOR
IG	DUPLEX – ISOLATED GROUND TYPE
WP	DUPLEX – WEATHERPROOF
R	RANGE OUTLET – 50A 125/250V GROUNDING TYPE
TP	TAMPERPROOF TYPE RECEPTACLE
KP	DUPLEX – KICKPLATE MOUNTING
C OR	DUPLEX – MOUNTED 42" A.F.F. OR ABOVE COUNTER BACKSPLASH
	SPECIAL PURPOSE RECEPTACLE – REFER TO FLOOR PLANS FOR TYPE
	CLOCK OUTLET – SINGLE OR DUPLEX – 15A., 120V., MTD. 8'–0" A.F.F. TO LC
	WIREMOLD G4000 DUAL CHANNEL SURFACE MOUNTED (42" A.F.F.) RACEWAY SYSTEM WITH DUPLEX 20A–125V OUTLETS 24" O.C. ALTERNATELY WIRED AND DATA/VOICE OUTLETS AS REQUIRED BY THE TENANT
	DUPLEX OUTLET WIRED TO NORMAL/EMERGENCY DISTRIBUTION SYSTEM

TELECOMMUNICATIONS

D/V	DATA/VOICE CONNECTION TO PARTITION SYSTEM – REFER TO DETAIL ON DRAWING E–*
	VOICE/DATA OUTLET – WALL MOUNTED – REFER TO DETAIL ON DRAWING E–*
	TELEPHONE OUTLET – WALL MOUNTED – REFER TO DETAIL ON DRAWING E–*
	DATA OUTLET – WALL MOUNTED – REFER TO DETAIL ON DRAWING E–*

EXISTING ELECTRICAL EQUIPMENT

ETR	EXISTING EQUIPMENT TO REMAIN
	DOTTED DENOTES EXISTING EQUIPMENT
XR	EXISTING EQUIPMENT TO BE RELOCATED
RX	NEW LOCATION OF RELOCATED EXISTING ELECTRICAL EQUIPMENT
X	EXISTING EQUIPMENT TO BE REMOVED

MOTOR CONTROLS AND DISTRIBUTION EQUIPMENT

	NON–FUSIBLE DISCONNECT SWITCH – RATING AS INDICATED
	FUSIBLE DISCONNECT SWITCH – RATING AS INDICATED
	ENCLOSED CIRCUIT BREAKER – RATING AS INDICATED
	MAGNETIC MOTOR STARTER – NUMERAL INDICATES NEMA SIZE
	MOTOR – NUMERAL INDICATES HORSEPOWER
CP	CONTROL PANEL
	TRANSFORMER – NUMERAL INDICATES KVA RATING
	LIGHTING AND/OR POWER PANELBOARD
	METER – CHECK METER EMON–DEMON WITH "PEAK DEMAND" READING – AMPERE AS INDICATED
VFD	VARIABLE FREQUENCY DRIVE

CONDUIT AND WIRING (BRANCH AND FEEDER CIRCUITRY)

	CONDUIT AND WIRING – DIAGONAL LINES INDICATE # OF WIRES (GROUNDING WIRE NOT SHOWN) MINIMUM WIRE SIZE #12 AWG. MINIMUM CONDUIT SIZE 1/2" (TYPICAL U.N.O.)
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	HOMERUN TO PANELBOARD DESIGNATED – 2 #12 & #12G–1/2"C. TO 20A–1P CIRCUIT BREAKER (TYPICAL UNLESS NOTED OTHERWISE)
	FLEXIBLE CONDUIT AND EQUIPMENT CONNECTION

FIRE ALARM SYSTEM - ADDRESSABLE

FACP	FIRE ALARM CONTROL PANEL
F	MANUAL PULL STATION – M.H. 48" TO C A.F.F.
F	SPEAKER/STROBE UNIT – M.H. 80" AFF OR 6" BELOW CEILING – CANDELA RATING AS INDICATED
	STROBE UNIT – M.H. 80" A.F.F. OR 6" BELOW CEILING – CANDELA RATINGS AS INDICATED
KK	KEY KEEPER – LOCK BOX – 10 KEY CAPACITY
HD	HEAT DETECTOR – COMBINATION TYPE – "DC" INDICATES DUAL CONTACTS
HD F	HEAT DETECTOR – FIXED TEMPERATURE TYPE
SD	SMOKE DETECTOR – "DC" INDICATES DUAL CONTACTS
S H	BEAM TYPE SMOKE DETECTOR – TRANSMITTER
S H	BEAM TYPE SMOKE DETECTOR – RECEIVER
SA SD	DUCT MOUNTED SMOKE DETECTOR – INSTALLED BY HVAC CONTR.,FURNISHED & WIRED BY ELECT. CONTR.
RTS	REMOTE INDICATING AND TESTING STATION
EB	STANDBY BATTERY UNIT
WF	WATER FLOW SWITCH – FURNISHED AND INSTALLED BY SPRINKLER CONTR., WIRED BY ELECTRICAL CONTR.
TS	TAMPER (SUPERVISORY) SWITCH – FURN. & INSTALLED BY SPRINKLER CONTR., WIRED BY ELEC. CONTR.
PIV TS	TAMPER SWITCH – POST INDICATOR VALVE – FURNISHED & INSTALLED BY SPRINKLER CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR
PS	PRESSURE SWITCH – FURNISHED AND INSTALLED BY SPRINKLER CONTR., WIRED BY ELECTRICAL CONTR.
RAI	REMOTE ALARM INDICATOR
RDD	REMOTE DIGITAL DISPLAY UNIT
DH	MAGNETIC DOOR HOLDER
	RED EXTERIOR FLASHING BEACON
FA	FIRE ALARM MONITORING RELAY
B	FIRE ALARM BELL – FURNISHED AND INSTALLED BY SPRINKLER CONTR., WIRED BY ELECTRICAL CONTR.
MM	MONITOR MODULE
CM	CONTROL MODULE
VCM	VENTILATION OVERIDE MODULE
F	MASTER BOX (SEE SPECIFICATIONS)

BUSWAY DISTRIBUTION SYSTEM

	FEEDER TYPE BUSWAY–AMPERAGE AS INDICATED
	PLUG–IN TYPE BUSWAY–AMPERAGE AS INDICATED
E_C	END CABLE TAP BOX
C_B	PLUG–IN CIRCUIT BREAKER UNIT – REFER TO SCHEDULE

FLOOR BOXES AND POKE THRU DEVICES

FB P	FLUSH MOUNTED POWER FLOOR BOX WITH CONDUIT TAKE–OFF FOR FURNITURE POWER. WALKER #880MP WITH 880MPA, 817P FLANGE AND 829CKI COVER PLATE
FB T	FLUSH MOUNTED TELECOM FLOOR BOX WITH CONDUIT TAKE–OFF FOR VOICE/DATA CABLING. WALKER #880MP WITH 880MPA, 817P FLANGE AND 829CKI COVER PLATE
FB D/V	DUAL GANG FLUSH MOUNTED CAST IRON FLOOR BOX WITH 120V–20A DUPLEX RECEPTACLE, DATA/VOICE OUTLET AND BRASS COVER PLATE
PT D/V	DUAL GANG FLUSH MOUNTED FIRE RATED POKE–THRU DEVICE WITH 20A–125V DUPLEX RECEPTACLE AND DATA/VOICE OUTLET AND BRASS COVER PLATE – REFER TO DETAIL ON DRAWING E–*
FB D/V TV	TRIPLE GANG FLUSH MOUNTED FIRE RATED POKE–THRU DEVICE WITH 20A–125V DUPLEX RECEPTACLE, DATA/VOICE OUTLET AND CATV OUTLET AND BRASS COVER PLATE – REFER TO DETAIL ON DRAWING E–*
PT BF	COMBINATION POWER AND VOICE/DATA FIRE RATED MONUMENT TYPE POKE THRU DEVICE FOR FURNITURE SYSTEM CONNECTION – REFER TO DETAIL ON DRAWING E–*
PT BF	POWER ONLY FIRE RATED MONUMENT TYPE POKE THRU DEVICE FOR FURNITURE SYSTEM CONNECTION – REFER TO DETAIL ON DRAWING E–*
PT	VOICE/DATA ONLY FIRE RATED MONUMENT TYPE POKE THRU DEVICE FOR FURNITURE SYSTEM CONNECTION – REFER TO DETAIL ON DRAWING E–*
PT	MONUMENT TYPE FIRE RATED POKE THRU – REFER TO DETAIL ON DRAWING E–*
BF	BASE FEED MODULE CONNECTION TO PARTITION SYSTEM – REFER TO DETAIL ON DRAWING E–*

EMERGENCY LIGHTING SYSTEMS - 12 VOLT

	BATTERY UNIT – DUAL–LITE #LZ30W (TYPICAL UNLESS NOTED OTHERWISE)
	REMOTE HEAD–WALL MOUNTED – DUAL–LITE #LZR6V5W
	REMOTE HEADS–WALL MOUNTED – DUAL–LITE #LZTR6V5W
—E—	EMERGENCY WIRING – 2#12–1/2" CONDUIT (TYPICAL UNLESS NOTED OTHERWISE)
DL	DAMP LOCATION EMERGENCY REMOTE HEAD – DUAL–LITE #LZR6V5W
WP	WEATHERPROOF EMERGENCY REMOTE HEAD – DUAL–LITE #N4X0607
	RECESSED REMOTE EMERGENCY LIGHT – DUAL–LITE #EXT–12258–18W

MISCELLANEOUS

	INDEXING SYMBOL
	ELECTRIC RADIATION – FURNISHED AND INSTALLED BY HVAC CONTRACTOR, WIRED BY THE ELECTRICAL CONTRACTOR
PAS	PUBLIC ADDRESS FLUSH CEILING MOUNTED SPEAKER WITH VOLUME CONTROL
CR	CARD READER – PROVIDED BY SECURITY SYSTEM VENDOR
J or J	JUNCTION BOX
TC	TIME CLOCK (SWITCH) 7 DAY ASTRONOMIC DIAL – 24 HOUR – DIGITAL CONTROL – BATTERY BACKUP
LV T	LINE VOLTAGE THERMOSTAT
DR	ELECTRIC DOOR RELEASE
PP	POWER POLE – DUAL CHANNEL
TV	COAXIAL OUTLET FOR C.A.T.V.
TV	COAXIAL OUTLET FOR C.A.T.V. WITH ASSOCIATED WALL MOUNTED DUPLEX RECEPTACLE MOUNT 12" BELOW FINISHED CEILING
SD L	SINGLE OR MULTISTATION LOCAL 120V PHOTOELECTRIC TYPE SMOKE DETECTOR WITH INTERNAL AUDIBLE DEVICE AND BATTERY BACKUP
CO L	SINGLE OR MULTISTATION LOCAL 120V CARBON MONOXIDE DETECTOR WITH INTERNAL AUDIBLE DEVICE AND BATTERY BACKUP
DS	FLUSH CEILING MOUNTED DAYLIGHT SENSOR – HUBBELL #DLC–PC–O

CABLE TRAY SYSTEMS

9	9" WIDE, 4" HIGH ALUMINUM LADDER TYPE CABLE TRAY STRAIGHT SECTION, 6" RUNG SPACING
18	18" WIDE, 4" HIGH ALUMINUM LADDER TYPE CABLE TRAY STRAIGHT SECTION, 6" RUNG SPACING
24	24" WIDE, 4" HIGH ALUMINUM LADDER TYPE CABLE TRAY STRAIGHT SECTION, 6" RUNG SPACING
	90° HORIZONTAL BEND
	CABLE TRAY TEE–SIZE AS REQUIRED

NOTE: THIS SYMBOL LIST IS A MASTER SCHEDULE. SOME OF THE SYMBOLS LISTED ABOVE MAY NOT BE APPLICABLE TO THE SCOPE OF WORK FOR THIS PROJECT.

ELECTRICAL SPECIFICATIONS

1. THE GENERAL CONDITIONS SHALL BE CONSIDERED AS FORMING A PART OF THESE SPECIFICATIONS AND SHALL BE CAREFULLY EXAMINED BEFORE PROPOSALS FOR ANY WORK ARE SUBMITTED.

2. THE SCOPE OF WORK SHALL CONSIST OF ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE ALL WORK INDICATED ON THE DRAWINGS AND IN THESE SPECIFICATIONS. THE WORK SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING:

A. MODIFICATIONS TO THE SECONDARY DISTRIBUTION SYSTEM AS INDICATED ON THE DRAWINGS.

B. GROUNDING AND BONDING OF ELECTRICAL SYSTEMS AND EQUIPMENT.

C. WIRING DEVICES (SWITCHES AND RECEPTACLES) COMPLETE WITH ASSOCIATED WALL PLATES.

D. POWER WIRING TO HVAC, PLUMBING AND FIRE PROTECTION EQUIPMENT OR APPLIANCES.

E. LIGHTING SYSTEM INCLUDING ALL FIXTURES, LAMPS, SWITCHING, ETC. AS REQUIRED.

F. ALL OTHER SYSTEMS HEREINAFTER SPECIFIED OR AS INDICATED ON THE DRAWINGS.

3. ALL ELECTRICAL WORK SHALL MEET OR EXCEED THE LATEST REQUIREMENTS OF ALL NATIONAL, STATE, MUNICIPAL AND OTHER AUTHORITIES HAVING JURISDICTION OVER ELECTRICAL CONSTRUCTION WORK AND THE PROJECT.

4. OBTAIN AND PAY FOR ALL PERMITS, FEES, INSPECTIONS, AND TESTS, AND COMPLY WITH ALL LAWS, ORDINANCES AND CODES PERTAINING TO THIS PORTION OF THE CONTRACT.

5. ALL WORK PROVIDED UNDER THIS SECTION SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF ACCEPTANCE OF THE WORK.

6. PRIOR TO PURCHASING ANY EQUIPMENT OR MATERIALS A LIST OF THEIR MANUFACTURERS AND "SHOP DRAWINGS" CATALOG CUTS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

7. ALL BRANCH WIRING, AND MAIN FEEDERS RUN IN EXPOSED AREAS SHALL BE RUN IN LIQUIDTIGHT FLEXIBLE METAL CONDUIT. COORDINATE ALL EXPOSED WIRING WITH ARCHITECT FOR APPROVAL PRIOR TO ROUGHIN.

8. ALL WIRING SHALL BE COPPER WITH 600V INSULATION, THWN OR THHN FOR BRANCH CIRCUITRY, AND XHHW FOR FEEDERS. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG. USE SOLID OR STRANDED CONDUCTORS FOR #12 AND #10 AWG. USE STRANDED COPPER FOR #8 AWG AND LARGER.

9. THE ELECTRICAL CONTRACTOR SHALL PROVIDE OUTLET, JUNCTION AND PULL BOXES AT ALL LOCATIONS WHERE THEY ARE REQUIRED TO FACILITATE THE PULLING, SUPPORTING, OR CONNECTING OF WIRES AND CABLES.

10. STANDARD DUPLEX CONVENIENCE RECEPTACLES SHALL BE 20A–125V–3 WIRE, GROUNDING TYPE BACK & SIDE WIRED. NEMA 5–20R, WHITE IN COLOR. STANDARD SWITCHES SHALL BE TOGGLE TYPE, AC QUITE DESIGN, 20A 125V/277V, SPEC GRADE WHITE IN COLOR. PROVIDE WHITE PLASTIC WALLPLATES WITH ALL WIRING DEVICES.

11. ALL EQUIPMENT AND SYSTEMS SHALL BE GROUNDED IN ACCORDANCE WITH BEST INDUSTRY PRACTICE AND SHALL COMPLY WITH CURRENT MASSACHUSETTS ELECTRICAL CODE REQUIREMENTS.

12. BEFORE AN APPLICATION FOR FINAL ACCEPTANCE OF THE WORK, ALL TESTS DEEMED NECESSARY BY THE ARCHITECT TO SHOW PROPER EXECUTION OF THE WORK SHALL HAVE BEEN PERFORMED AND COMPLETED IN THE PRESENCE OF THE ARCHITECT. ANY DEFECTS OR DEFICIENCIES DISCOVERED IN ANY OF THE ELECTRIC WORK SHALL BE CORRECTED.

13. AS PART OF THE ELECTRICAL WORK, A COMPLETE SET OF "AS BUILTS" OR RECORD ELECTRICAL DRAWINGS SHALL BE MADE UP AND DELIVERED TO THE ARCHITECT. THE DRAWINGS SHALL BE PREPARED ON AUTOCAD AND SUBMITTED ON DISK AND ONE SET OF REPRODUCEABLE PLOTS AT THE COMPLETION OF THE PROJECT.

14. SUPPORT AND FASTEN ELECTRICAL WORK IN ACCORDANCE WITH BEST INDUSTRY PRACTICE.

15. RUN EXPOSED CONDUIT PERPENDICULAR OR PARALLEL TO BUILDING BUILDING METAL FRAMING

16. EXCEPT WHERE MODIFIED BY A SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE UNDERSTOOD THAT THE INDICATION AND/OR DESCRIPTION OF ANY ELECTRICAL ITEM IN THE DRAWINGS OR SPECIFICATIONS FOR ELECTRICAL WORK CARRIES WITH IT THE INSTRUCTION TO FURNISH, INSTALL AND CONNECT THE ITEM AS PART OF THE ELECTRICAL WORK REGARDLESS OF WHETHER OR NOT IT IS SPECIFICALLY STATED TO DO SO.

17. IT SHALL BE UNDERSTOOD THAT THE SPECIFICATIONS AND DRAWINGS FOR ELECTRICAL WORK ARE COMPLIMENTARY AND ARE TO BE TAKEN TOGETHER FOR A COMPLETE INTERPRETATION OF THE ELECTRICAL WORK, EXCEPT THAT INDICATIONS ON THE DRAWINGS, WHICH REFER TO AN INDIVIDUAL ELEMENTS OF WORK, TAKE PRECEDENCE OVER THE SPECIFICATIONS WHERE THEY CONFLICT WITH SAME.

18. THE ELECTRICAL CONTRACTOR SHALL BE PERMITTED TO INSPECT THE CONDITIONS AT THE SITE, IF HE/SHE SO DESIRES. FAILURE TO INSPECT EXISTING CONDITIONS OR TO FULLY UNDERSTAND THE WORK WHICH IS REQUIRED SHALL NOT EXCUSE THE ELECTRICAL CONTRACTOR FROM HIS/HER OBLIGATIONS TO FURNISH AND INSTALL THE WORK IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE CONTRACT DRAWINGS AND UNDER ALL SITE CONDITIONS AS THEY EXIST.

19. ALL MATERIALS SHALL BE NEW AND SHALL BEAR THE UL LABEL.

20. THE INSULATION OF EACH WIRE OR CABLE SHALL BE COLOR CODED, AS PER THE 120/208V OR 277/480V MASSACHUSETTS ELECTRIC CODE REQUIREMENTS.

21. QMQB DISTRIBUTION SWITCHES SHALL BE NEMA TYPE HEAVY DUTY (GENERAL DUTY WHERE 60A OR LESS) HORSEPOWER RATED SWITCHES.

22. THE HVAC CONTRACTOR SHALL PROVIDE MAGNETIC MOTOR STARTERS WHERE INDICATED FOR MECHANICAL EQUIPMENT. PROVIDE AUXILIARY CONTACTS IN MOTOR STARTERS WHERE REQUIRED FOR INTERLOCKING PURPOSES.

23. PROVIDE A TEMPORARY LIGHTING AND POWER SYSTEM THROUGHOUT THE SPACE FOR USE DURING THE CONSTRUCTION PERIOD. USE THE EXISTING PANELBOARDS FOR THE TEMPORARY FEED POINT. PROVIDE ALL EQUIPMENT THAT MAY BE REQUIRED INCLUDING METERING, PANELS, ETC. REMOVE ALL TEMPORARY WIRING, FIXTURES AND OUTLETS AT THE TERMINATION OF THE CONSTRUCTION PERIOD. THE GENERAL CONTRACTOR SHALL PAY FOR ALL ENERGY CONSUMED DURING THE CONSTRUCTION PERIOD.

24. ALL WIRING DEVICES SHALL HAVE THEIR PANELBOARD ORIGIN AND CIRCUIT NUMBERS STAMPED OR TAPED ON THE BACKSIDE OF THEIR ASSOCIATED WALLPLATE.

25. PANELBOARDS SHALL BE OF BOLT–ON CONSTRUCTION WITH EQUIPMENT GROUND BAR AND TYPED CIRCUIT DIRECTORIES.

GENERAL NOTES

1. ELECTRICAL CONDUIT SHALL BE RUN CONCEALED WHEREVER POSSIBLE. RUN EXPOSED CONDUIT PERPENDICULAR OR PARALLEL TO BUILDING WALLS OR COLUMNS.

2. WIRE AND CONDUIT SIZES INDICATED ON HOMERUNS SHALL RUN CONTINUOUS THROUGHOUT CIRCUIT.

3. CONDUITS AND CIRCUITRY INDICATED ON THE DRAWINGS ARE DIAGRAMMATIC ONLY. FINAL LOCATION OF CONDUIT SHALL BE FIELD COORDINATED SO AS TO AVOID CONFLICTS WITH OTHER TRADES.

4. ALL 120V BRANCH CIRCUITS WHEN 100 LINEAR FEET OR MORE FROM LAST OUTLET OR FIXTURE IN CIRCUIT TO RESPECTIVE PANELBOARDS SHALL BE A MINIMUM OF #10 AWG COPPER WIRE(S).

5. ALL 208V BRANCH CIRCUITS WHEN 200 LINEAR FEET OR MORE FROM LAST OUTLET OR FIXTURE IN CIRCUIT TO RESPECTIVE PANELBOARDS SHALL BE A MINIMUM OF #10 AWG COPPER WIRE(S).

6. COORDINATE EXACT LOCATION OF MECHANICAL EQUIPMENT WITH H.V.A.C., PLUMBING, AND FIRE PROTECTION CONTRACTOR'S.

7. COORDINATE EXACT LOCATION OF TENANT EQUIPMENT WITH THE ARCHITECT'S FIELD SUPERVISOR.

8. RACEWAYS RUN THROUGH AREAS OF WIDELY DIFFERENT TEMPERATURES SHALL BE SEALED WITH A PLIABLE COMPOUND AT THE VARIANT TEMPERATURE AREA.

9. WHEN ROUGHING IN, OUTLET BOXES FOR DEVICES SHALL BE MEASURED OFF OF FINISHED FLOOR TO A SET HEIGHT, AND THEN ALIGNED HORIZONTALLY SO THAT ALL DEVICES WILL BE LEVEL WITHIN A GIVEN AREA.

10. PROVIDE ELECTRICAL OUTLET PLATE GASKETS IN ALL DEVICE BOXES INSTALLED IN WALLS SEPARATING CONDITIONED AND UNCONDITIONED SPACES.

11. ALL RACEWAY PENETRATIONS THROUGH FIRE RATED WALL, CEILING, OR FLOOR ASSEMBLIES SHALL BE PROPERLY FIRE SEALED.

12. PROVIDE SEISMIC RESTRAINTS FOR ALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH MASSACHUSETTS BUILDING CODE, 6TH EDITION RECOMMENDATIONS.

13. OUTLETS OR DEVICES MOUNTED ON EXISTING CMU OR CONCRETE WALLS SHALL BE SURFACE MOUNTED IN APPROPRIATE BOXES.

14. ELECTRICAL RACEWAYS WHICH TRAVERSE THROUGH CMU WALLS SHALL BE PROPERLY WEATHERSEALED.

15. FEEDERS OR BRANCH CIRCUITS TO ALL ELECTRICALLY POWERED ROOFTOP MOUNTED EQUIPMENT SHALL BE RUN IN THE JOIST SPACE ON THE UNDERSIDE OF THE ROOF DECK. FOR ROOFTOP AIR CONDITIONING UNITS THE POWER CIRCUIT AND RACEWAY SHALL RISE UP TO THE TERMINALS OF THE UNIT CONTROL PANEL WITHIN THE CURB CUT OPENING. FOR ALL OTHER ELECTRICALLY POWERED ROOFTOP EQUIPMENT PROVIDE PITCH POCKETS AND RACEWAY SEALS AS REQUIRED.

16. BACK TO BACK RECEPTACLES, SWITCH, AND/OR VOICE/DATA DEVICES AND OUTLETS WILL NOT BE ALLOWED IN THE SAME STUD SPACE OF ACOUSTICALLY TREATED OR FIRE RATED WALL PARTITIONS.

17. CONFIRM THE VOLTAGE AND AMPERAGE CHARACTERISTICS OF ALL ELECTRICALLY POWERED HVAC, PLUMBING OR FIRE PROTECTION EQUIPMENT WITH THE MECHANICAL CONTRACTORS PRIOR TO COMMENCING WORK AND BEFORE ORDERING ELECTRICAL DISTRIBUTION EQUIPMENT.

SYM	DESCRIPTION	DATE	APPR

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ANIMAL AND PLANT HEALTH INSPECTION SERVICES

OTIS ANG BASE — BOURNE, MASSACHUSETTS

GREENHOUSE

ELECTRICAL NOTES AND LEGEND

CODE ID. NO. 80091 | SIZE ANSI D

SCALE: AS NOTED

WORK ORDER NO.

CONSTR. CONTR. NO.

DRAWING NO. E-1

SHEET 8 OF 11

DRAWFORM REVISION: 01 MAY 2006

LIGHTING FIXTURE SCHEDULE

MOUNTING	FLUORESCENT	INCANDESCENT/HID	EXIT	
RECESSED	FR	R	XR	
CEILING/SURFACE	FC	C	XC	
WALL	FW	W	XW	
PENDANT/SUSPENDED	FP	P	XP	
TRACK	FT	T		

TYPE	DESCRIPTION	MANUFACTURER & CATALOG NO.	LAMPS		INPUT		REMARKS
			NO.	TYPE	VOLTS	WATTS	
C	400 HPS, 208V PLANT LIGHT	PL LIGHT SYSTEMS # 40-1015	1	400W HPS	208	450	
W	TWIN 150W PAR LAMP HOLDERS WITH MOTION SENSOR	HUBBELL # S2LH	1	150W PAR 38	120	300	

NOTE: LIGHTING FIXTURE NOTES LISTED ABOVE APPLY TO ALL FIXTURES LISTED ABOVE AND AS SHOWN ON THE LIGHTING PLANS UNLESS SPECIFICALLY NOTED OTHERWISE.

LIGHTING FIXTURE NOTES

1. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL LIGHTING FIXTURES COMPLETE WITH MOUNTING ACCESSORIES TO MEET JOB CONDITIONS.

2. THE ELECTRICAL CONTRACTOR SHALL VERIFY FIXTURE MOUNTING AND EXACT LOCATIONS AGAINST ARCHITECTS REFLECTED CEILING PLANS, ELEVATIONS AND DETAIL DRAWINGS.

3. SERIES FIXTURES SHALL BE LENGTH AS SHOWN ON DRAWINGS.

4. FIXTURE LETTERS SHOWN ONCE ON A CONTINUOUS ROW OF FIXTURES SHALL BE TYPICAL FOR THAT ROW UNLESS OTHERWISE NOTED.

5. ALL FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE, INDEPENDENT OF HUNG CEILING.

6. EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL FIXTURES SHALL BE CONFIRMED WITH THE ARCHITECT PRIOR TO ROUGHING IN.

7. ALL FLOURESCENT FIXTURES SHALL BE EQUIPPED WITH ENERGY SAVER LAMPS. ALL FLOURESCENT T8 SERIES LAMPS SHALL BE TRIPHOSPHOR LAMPS WITH NO SUBSTITUTIONS.

8. INFORMATION LISTED IN THE SECOND COLUMN OF THE FIXTURE SCHEHLE ABOVE SETS THE GENERAL DESCRIPTION OF EACH FIXTURE. INFORMATION LISTED IN THE THIRD COLUMN OF THE FIXTURE SCHEDULE SETS THE STANDARD OF QUALITY. IF DISCREPANCIES ARISE BETWEEN DESCRIPTION OF FIXTURE AND THE CATALOG NUMBER THEN NOTIFY THE ENGINEER BEFORE ORDERING SAID FIXTURE.

9. ONE LAMP OR THREE LAMP FLUORESCENT LUMINARES USED FOR GENERAL LIGHTING, AND MOUNTED WITHIN TEN FEET OF EACH OTHER AND WITHIN THE SAME ROOM SHALL BE TANDEM WIRED TO ELIMINATE UNNECESSARY USE OF SINGLE LAMP BALLASTS. USE ONE (3) LAMP BALLAST FOR THREE LAMP FIXTURES FOUR FOOT IN LENGTH. USE FOUR LAMP BALLASTS AND TANDEM WIRE ADJACENT TWO LAMP FIXTURES WHEREVER FEASIBLE.

10. ALL LIGHTING FIXTURES MOUNTED OVER OPEN FOOD DISPLAYS OR CASES SHALL BE EQUIPPED WITH LENSES OR THE LAMPS SHALL BE FITTED WITH PROTECTIVE TUBE GUARDS.

11. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR AIMING OR ADJUSTING ALL DIRECTIONALLY ORIENTED FIXTURES AT THE COMPLETION OF THE PROJECT AS PER THE ENGINEERS' DIRECTION.

12. ALL FLUORESCENT FIXTURES SHALL BE EQUIPPED WITH SOLID STATE HIGH FREQUENCY ELECTRONIC BALLASTS IN ACCORDANCE WITH THE SPECIFICATION UNLESS NOTED OTHERWISE. ELECTRONIC BALLASTS MUST BE UTILITY COMPANY "ELIGIBLE" BALLASTS.

13. ALL INDIVIDUALLY MOUNTED AND GROUP OR PATTERN MOUNTED SUSPENDED FIXTURES SHALL BE DONE SO WITH AIRCRAFT CABLE SUSPENSION SYSTEMS, (LENGTHS OR MOUNTING HEIGHTS AS INDICATED). PROVIDE ROUND WHITE 1" DIAMETER CANOPY COVER PLATES FOR CEILING PENETRATIONS OF AIRCRAFT CABLE.

14. MANUFACTURERS AND CATALOG NUMBERS ARE LISTED IN THE FIXTURE SCHEDULE TO SET A STANDARD OF QUALITY FOR THE LIGHTING FIXTURES. SUBSTITUTION OF LIGHTING FIXTURES WILL BE ALLOWED WHEN THE SUBSTITUTED FIXTURE(S) EQUAL OR EXCEED THE AESTHETIC AND PERFORMANCE CHARACTERISTICS OF THE LIGHTING FIXTURE(S) SPECIFIED, AND ARE APPROVED BY THE ENGINEER.

15. FIXTURES WITH LAMPS SPECIFIED AS 8 FOOT IN LENGTH MUST BE PROVIDED AS SPECIFIED. SUBSTITUTION OF TWO TANDEM 4 FOOT LAMPS IN LIEU OF 8 FOOT LAMP WILL NOT BE ACCEPTABLE.

16. ALL POWER CABLE CORD DROPS TO SUSPENSION MOUNTED FIXTURES SHALL BE DONE SO WITH 600V, #12 AWG TYPE SO STRAIGHT CABLE WITH A WHITE COVERED OUTER INSULATING PVC JACKET WITH NO VISIBLE MARKINGS.

17. FOR ALL FIXTURES EQUIPPED WITH REFLECTORS; PROVIDE ALIGNER CLIPS AT ALL FIXTURE JOINTS.

18. ALL RECESSED FIXTURES INSTALLED IN AREAS SEPERATING CONDITIONED AND UNCONDITIONED SPACES SHALL BE IC LABELED.

19. ALL ELECTRONIC BALLASTS SHALL BE UL LISTED AND COMPLY WITH ALL FCC AND NEMA LIMITS. TOTAL HARMONIC DISTORTION LEVELS SHALL BE LESS THAN 20% AND GREATER THAN 10%. CREST FACTORS SHALL BE LESS THAN 1.6 AND POWER FACTOR SHALL BE GREATER THAN 90%.

20. STAGGERED STRIP FIXTURES MOUNTED IN COVES SHALL BE FIELD MEASURED AND THE MAXIMUM LENGTH OF UNITS SHALL BE PROVIDED TO CONTINUOUSLY ILLUMINATE COVES.

21. ALL RECESSED GRID CEILING MOUNTED LIGHTING FIXTURES SHALL BE EQUIPPED WITH EARTHQUAKE CLIPS.

22. ALL FLOURESCENT LAMPS SHALL BE LOW MERCURY T.C.L.P. COMPLIANT.

SCHEDULE OF MECHANICAL EQUIPMENT

ITEM	EQUIPMENT DESIGNATION	ELECTRICAL RATING					ELECTRICAL WORK REQUIRED
		HP	AMPS	KW	VOLTS	PHASE	
H 1	GAS FIRED UNIT HEATER	1/8	–	–	120	1	1 3 5
H 2	GAS FIRED UNIT HEATER	1/8	–	–	120	1	1 3 5
F 1	FAN	1/8	–	–	120	1	1 3 5
F 2	FAN	1/8	–	–	120	1	1 3 5
F 3	FAN	1/8	–	–	120	1	1 3 5
F 4	FAN	1/8	–	–	120	1	1 3 5
C 1	COOLING FAN	1/2	–	–	120	1	1 3 5
C 2	COOLING FAN	1/2	–	–	120	1	1 3 5
C 3	COOLING FAN	1/2	–	–	120	1	1 3 5
C 4	COOLING FAN	1/2	–	–	120	1	1 3 5

ELECTRIC WORK NOTES
PERTAINING TO SCHEDULE OF MECHANICALEQUIPMENT

1. REFER TO FLOOR PLANS FOR EXACT QUANTITIES OF ALL SCHEDULED EQUIPMENT. ALL SCHEDULED EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY OTHERS. UNLESS NOTED OTHERWISE.
2. INSERT PLUG OF EQUIPMENT INTO RECEPTACLE.
3. EXTEND INDICATED POWER CIRCUIT AND CONNECT SAME TO THE LINE TERMINALS OF THE EQUIPMENT. WHEN THE SCHEDULED EQUIPMENT IS SUBJECT TO VIBRATION OR MOVEMENT, THE FINAL PORTION OF THE POWER FEED (NOT TO EXCEED 48" IN LENGTH) SHALL BE WITH FLEXIBLE METALLIC CONDUIT.
4. LEAVE SUITABLE SLACK ON WIRES FOR POWER CIRCUIT CONNECTION BY OTHERS. PROVIDE SUITABLE PLATE ON OUTLET BOX.
5. PROVIDE DISCONNECT MEANS AND CONNECTIONS AS REQUIRED TO INTERPOSE SAME BETWEEN TERMINATION OF BUILDING WIRING AND LINE TERMINALS OF UNIT -- TYPE OF DISCONNECT MEANS AND MOUNTING LOCATION TO BE IN ACCORDANCE WITH INSTRUCTION ISSUED BY THE MANUFACTURER OF THE UNIT.
6. PROVIDE CONTROL CIRCUIT RUN FROM EQUIPMENT STARTER TO ACTUATING DEVICE -- RUN TO CONTAIN AN ADEQUATE NUMBER OF WIRES FOR PROPER OPERATION.
7. EQUIPMENT IS PROVIDED WITH INTEGRAL DISCONNECT SWITCH WITHIN EQUIPMENT HOUSING.
8. EQUIPMENT IS PROVIDED WITH INTEGRAL STARTER AND ACTUATING DEVICE WITH OFF POSITION. PROVIDE NECESSARY POWER AND CONTROL WIRING FOR EQUIPMENT OPERATION.
9. INSTALL CONTROLLER FURNISHED SEPARATE FROM ELECTRIC WORK AS DIRECTED.
10. MOTOR IS PART OF FACTORY WIRED MULTIPLE MOTOR "SINGLE LINE CONNECTION" PACKAGE EQUIPMENT FURNISHED AND INSTALLED SEPARATE FROM ELECTRIC WORK COMPLETE WITH INTEGRAL MOTOR STARTERS. EXTEND INDICATED POWER CIRCUIT TO ONE SET OF LINE TERMINALS AS SHOWN ON THE DRAWINGS.
11. PROVIDE "HAND-OFF-AUTO" CONTROL IN STARTER COVER.
12. PROVIDE WHERE INDICATED ON DRAWINGS A REMOTE "START-STOP" STATION WITH PILOT LIGHT.
13. HVAC CONTRACTOR FURNISHES AND INSTALLS A TIME CLOCK FOR CONTROL OF MOTOR. ELECTRICAL CONTRACTOR WIRES THE CLOCK.
14. MAGNETIC MOTOR STARTER WITH "HAND" "OFF" "AUTO" CONTROL MOUNTED IN STARTER COVER. IS FURNISHED BY ELECTRICAL CONTRACTORS, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
15. EQUIPMENT IS PROVIDED WITH A CONTROL PANEL WITH INTEGRAL MOTOR STARTER AND OVERCURRENT DEVICE.
16. ELECTRICAL CONTRACTOR PROVIDES A DUPLEX MOTOR CONTROLLER WITH (2) NEMA ONE STARTERS, CIRCUIT BREAKERS, OVERLOAD RELAYS, H-O-A CONTROLLER, PILOT LIGHTS, AUTOMATIC ALTERNATION CONTROLS IN A COMMON NEMA ONE ENCLOSURE.
17. MECHANICAL CONTRACTOR PROVIDES A VARIABLE FREQUENCY DRIVE FOR MOTOR COMPLETE WITH INTERNAL OVERCURRENT DEVICE.
18. EACH ITEM REFERRED TO THIS NOTE IS AN EXISTING UNIT OF MECHANICAL EQUIPMENT TO BE RELOCATED. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.

SYM	DESCRIPTION	DATE	APPR

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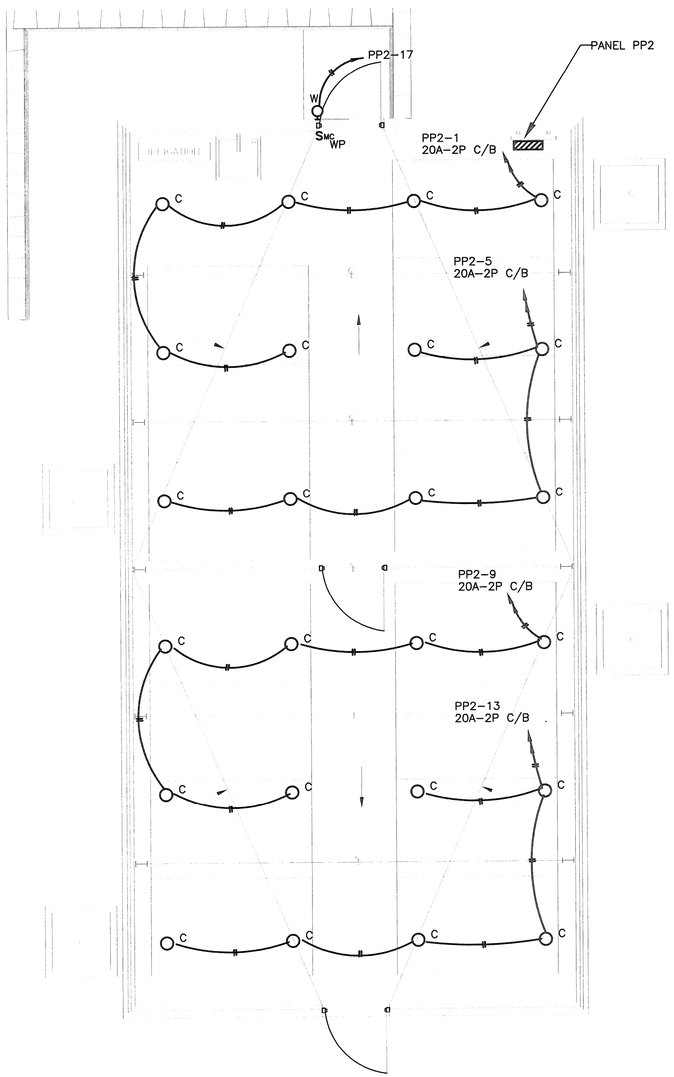
OTIS ANG BASE BOURNE, MASSACHUSETTS
GREENHOUSE
ELECTRICAL SCHEDULES

CODE ID. NO. 80091 SIZE ANSI D
SCALE: AS NOTED

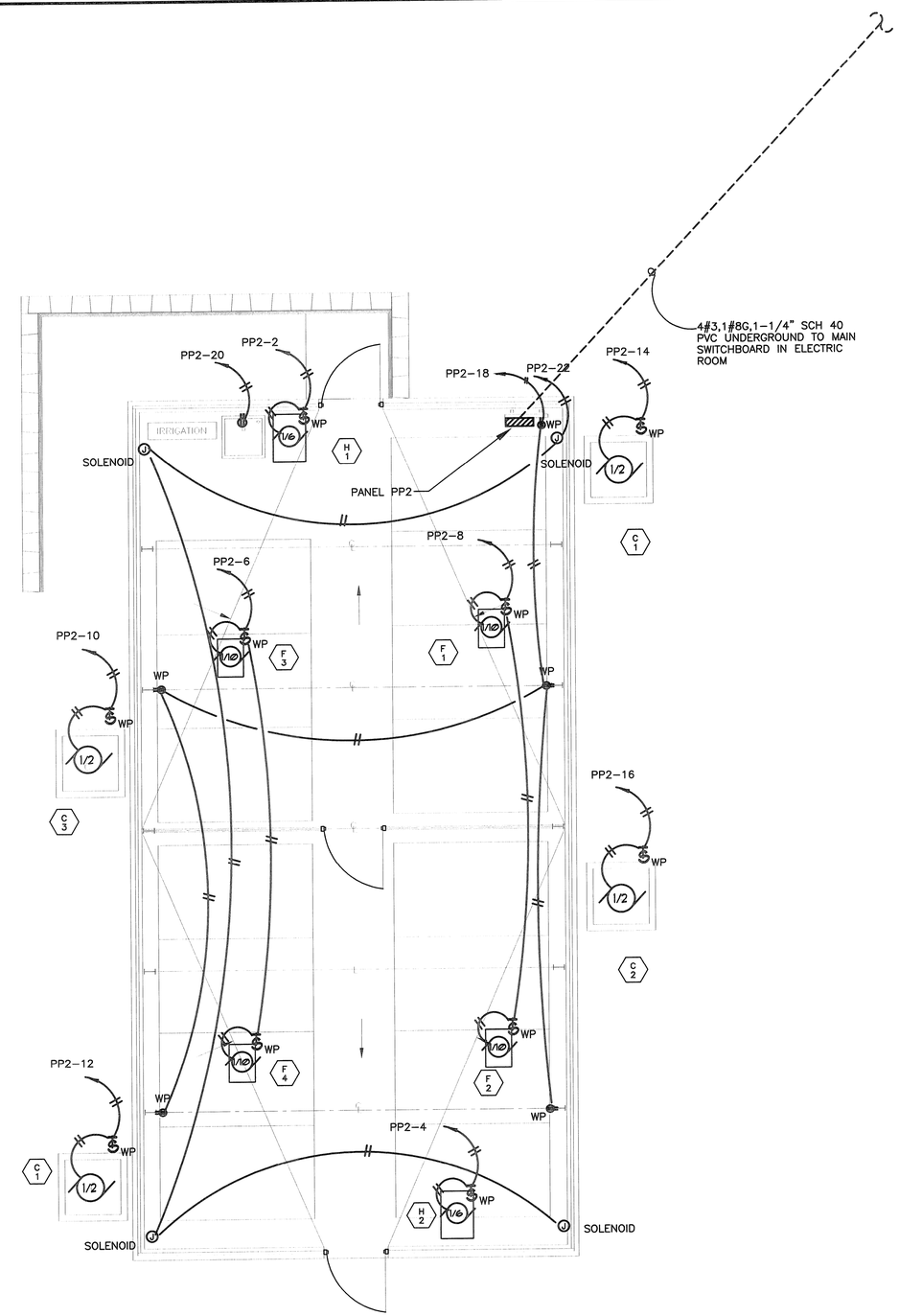
WORK ORDER NO.
CONSTR. CONTR. NO.
DRAWING NO. E-2
SHEET 9 OF 11

DRAWFORM REVISION: 01 MAY 2006



FLOOR PLAN—LIGHTING

SCALE: 1/4"=1'-0"



FLOOR PLAN—POWER

SCALE: 1/4"=1'-0"

SYM	DESCRIPTION	DATE	APPR	

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BOURNE, MASSACHUSETTS

GREENHOUSE
LIGHTING AND POWER PLAN

CODE ID. NO. 80091 SIZE ANSI D

SCALE: AS NOTED

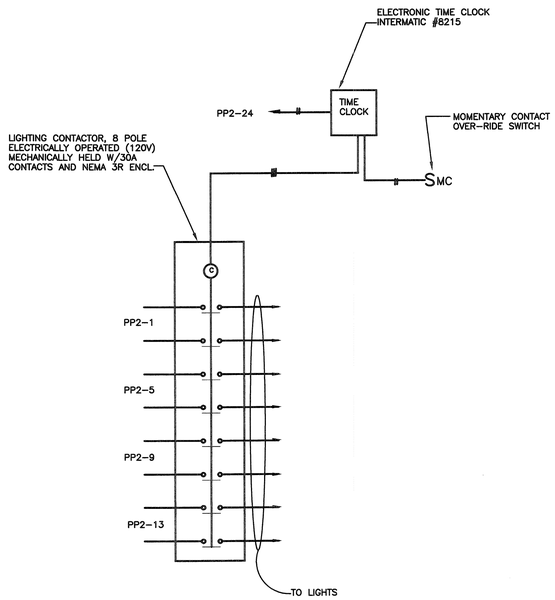
WORK ORDER NO.

CONSTR. CONTR. NO.

DRAWING NO. E-3

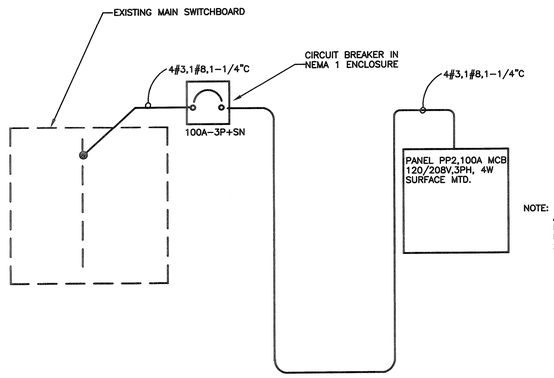
SHEET 10 OF 11

DRAWFORM REVISION: 01 MAY 2000



LIGHTING CONTROL DIAGRAM

NO SCALE



NOTE: PROVIDE DRIVEN GROUND ROD AND BOND FOUNDATION RE-BAR, METAL U.G. WATER PIPE, BLDG METAL FRAME ETC. PER N.E.C. 250-32

ONE-LINE WIRING DIAGRAM

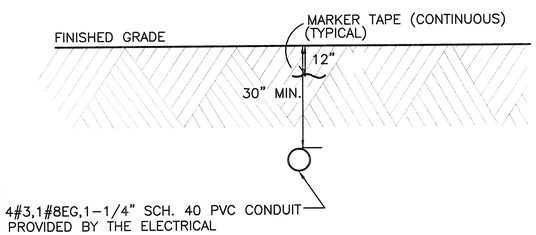
NO SCALE

PANEL: PP2 MOUNTING: SURFACE TOTAL POLES: 42

PHASE: 3 WIRES: 4 A.I.C. 10 K VOLTAGE: 120/208 MAINS: 100 MCB

DESCRIPTION OF LOADS	KVA LOAD A#	KVA LOAD B#	KVA LOAD C#	BREAKER FRAME	BREAKER TRIP	BREAKER POLES	CKT	ABC	CKT	BREAKER POLES	BREAKER TRIP	BREAKER FRAME	KVA LOAD A#	KVA LOAD B#	KVA LOAD C#	DESCRIPTION OF LOADS
LIGHTING	1.4			100	20	2	1		2	1	20	100	.3			HEATER
–		1.4		–	–	–	3		4					.3		HEATER
LIGHTING			1.4	100	20	2	5		6						.8	F-1 (2)
–	1.4			–	–	–	7		8				.8			F-1 (2)
LIGHTING		1.4		100	20	2	9		10					1.2		COOLER
–			1.4	–	–	–	11		12						1.2	COOLER
LIGHTING	1.4			100	20	2	13		14				1.2			COOLER
–		1.4		–	–	–	15		16					1.2		COOLER
LIGHTING			.3	100	20	1	17		18						.9	RECEPTACLES
SPARE							19		20							PUMP
							21		22							SOLENOIDS
							23		24							TIME CLOCK PWR
PROVISIONS							25		26							SPARE
							27		28							
							29		30							
							31		32							PROVISIONS
							33		34							
							35		36							
							37		38							
							39		40							
							41		42							

PHASE A: 6.5 PHASE B: 6.9 PHASE C: 6 TOTAL: 19.4



UNDERGROUND CONDUIT DETAIL SECTION A-A

NO SCALE

SYM	DESCRIPTION	DATE	APPR

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GREENHOUSE
WIRING DIAGRAM

CODE ID. NO. 80091 SIZE ANSI D
SCALE: AS NOTED

WORK ORDER NO.
CONSTR. CONTR. NO.

DRAWING NO. E-4

SHEET 11 OF 11

DRAWFORM REVISION: 01 MAY 2009