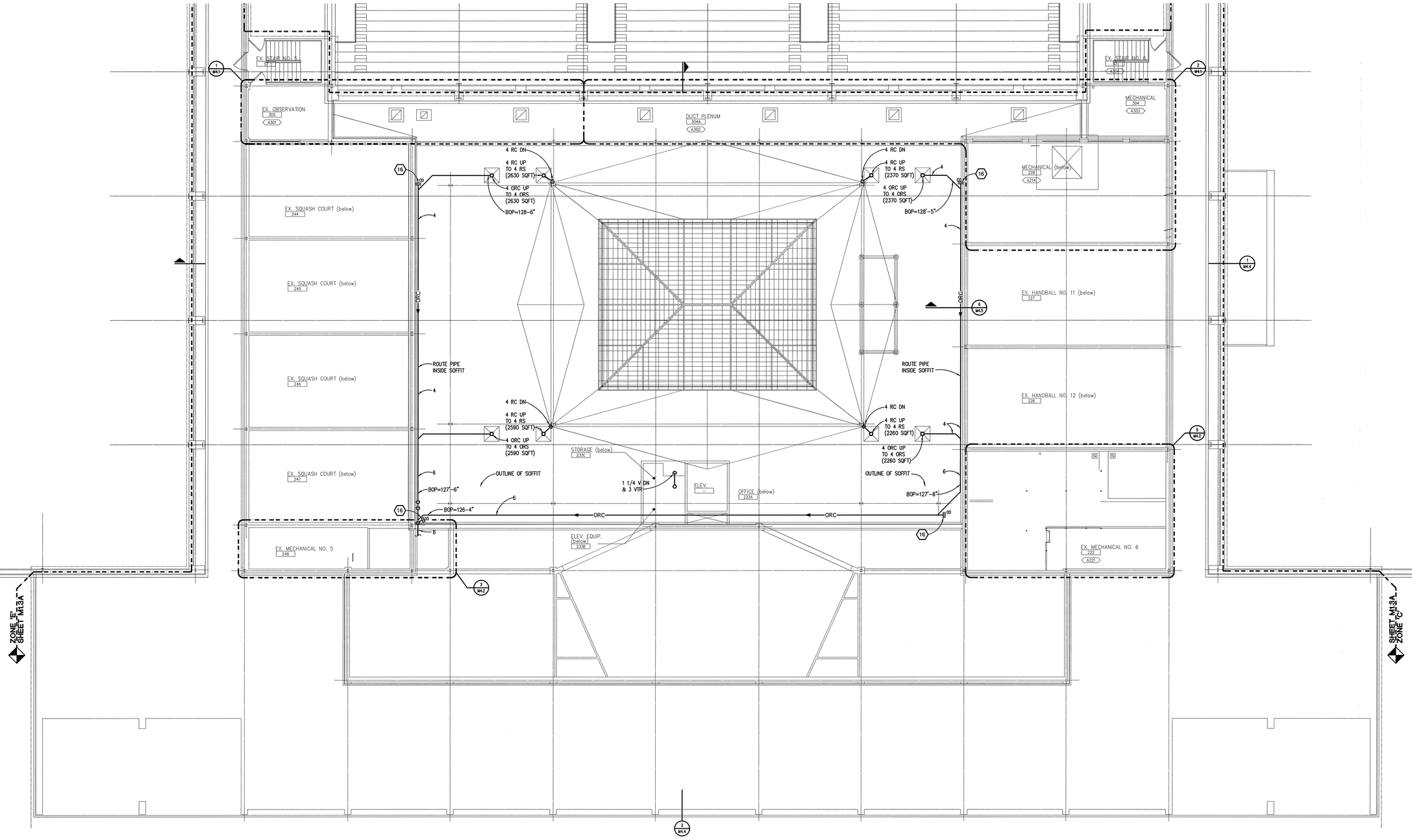


TRUE NORTH

THIRD LEVEL PLUMBING PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

PLUMBING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC & INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS OF PLUMBING FIXTURES.
3. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WITH THE WORK OF ALL OTHER TRADES.
4. PIPING SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. PIPING SHALL NOT BE LOCATED BELOW DUCT MOUNTED AIR TERMINAL UNITS, TERMINAL UNIT HEATING COILS, OR OTHER EQUIPMENT.
6. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
7. CONTRACTOR SHALL COORDINATE THE SHUT DOWN OF ANY EXISTING SERVICES AND/OR EQUIPMENT WITH THE OWNER'S REPRESENTATIVE.
8. HOT AND COLD WATER PIPING RUN-OUTS TO LAVS AND SINKS SHALL BE 3/4" UNLESS NOTED OTHERWISE. REFER TO SPECIFICATIONS FOR FIXTURE CONNECTION SIZES.
9. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 25'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
10. PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
11. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

CONSTRUCTION NOTES:

1. INSTALL RC PIPING IN ARCHITECTURAL COLUMN LOCATE CLEAN OUT AT TOP OF STACK ABOVE ENCLOSURE FOR ACCESS. REFER TO ARCHITECTURAL DETAILS AND DETAIL ON M5.2.
2. OFFSET ORC PIPING AND ROUTE TIGHT TO GYM WALL SUPPORT PIPING FROM WALL.
3. REMOVE ELBOW IN THE EXISTING WATER MAIN PIPING. INSTALL NEW TEE AND CONNECT TO THE EXISTING PIPING. INSTALL NEW AUTOMATIC SPRINKLER PIPING AS INDICATED HERE AND ON THE AUTOMATIC SPRINKLER RISER PIPING DIAGRAM.
4. NOT USED
5. ROUTE 3/4 CW & 3/4 HW DN IN WALL TO SS-1.
6. INSTALL NEW FLOOR DRAIN AND CONNECT TO EXISTING SANITARY PIPING.
7. NEW UNDERGROUND STORM PIPING CONNECT TO EXISTING. COORDINATE UNDERGROUND STORM PIPING WITH NEW COLUMN FOOTINGS.
8. ROOM AIR CONDITIONING UNIT- ROUTE ¾ CONDENSATE DRAIN BELOW CEILING TO EXISTING VENT DRAIN-REFER TO DETAIL ON SHEET M5.1
9. NOT USED
10. ROUTE NEW 3 SAN FROM SS-1 IN BASEMENT CEILING SPACE AND CONNECT TO EXISTING 6 SAN.
11. INCLUDE ALL PIPING AND WORK ASSOCIATED WITH SS-1 IN BASE BID.
12. NOT USED
13. ¾ CW DOWN TO EWC-1 ON THIS FLOOR AND ¾ CW UP TO EWC-1 ON THE SECOND FLOOR.
14. NOT USED
15. NOT USED
16. PROVIDE MINIMUM 18" CLEARANCE (FOR 6" AND SMALLER, FOR 8" AND LARGER PROVIDE 36" CLEARANCE) AT CLEAN OUT. COORDINATE WITH ALL OTHER TRADES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:	SHEET: OF:
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED	
	DWG NO: B-151-76	
	CARD NO: CP 03111	

TMP ARCHITECTURE

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Tel: 248-879-5666
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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Third Level Plumbing Plan - Zone 'A'

KEY PLAN (NO SCALE)

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

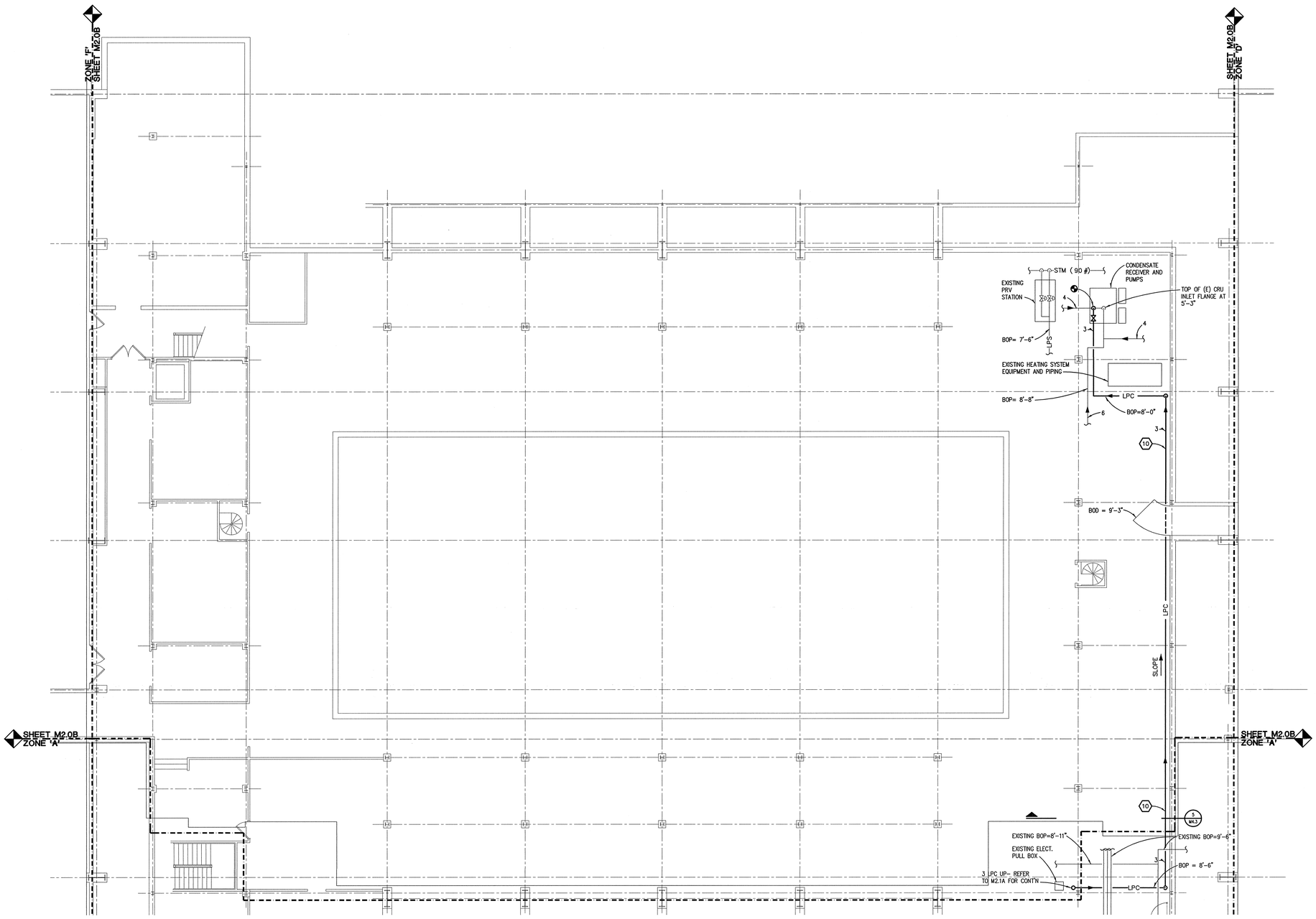
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M1.3A

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HVAC GENERAL NOTES:

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4. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
5. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS, ETC. WITH ARCHITECTURAL TRADES.
6. CONTRACTOR SHALL MOUNT THERMOSTATS 48" A.F.F. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHEN INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.
7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
8. BRANCH DUCTWORK UPSTREAM OF SUPPLY TERMINAL UNITS SHALL BE BOX INLET SIZE NOTED IN THE SCHEDULE UNLESS OTHERWISE NOTED.
9. BRANCH DUCTWORK DOWNSTREAM OF RETURN TERMINAL UNITS SHALL TRANSITION TO BOX INLET SIZE NOTED IN SCHEDULE UNLESS OTHERWISE NOTED.
10. CONTRACTOR SHALL NOT LOCATE PIPING BELOW DUCT MOUNTED AIR TERMINAL UNITS, TERMINAL UNIT HEATING COILS, OR OTHER EQUIPMENT.
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DETAILS.
12. COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO TERMINAL UNITS, BALANCING DAMPERS, TERMINAL UNIT HEATING COIL PIPING, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

TRUE NORTH

BASEMENT LEVEL HVAC PLAN - ZONE 'B'

SCALE: 1/8" = 1' - 0"

0 1 4 8

CONSTRUCTION NOTES:

1. DIFFUSER MOUNTED IN THE VERTICAL FACE OF SOFFIT.
2. TRANSITION EXISTING 26x9 DUCT TO 16x14 AND CONNECT WITH EXISTING 16x14 DUCT IN 32x14 DUCT. TRANSITION 32x14 TO FAN INLET. PROVIDE MANUAL BALANCING DAMPERS AT CONNECTION TO EACH EXISTING DUCT. BALANCE THE 26x9 DUCT TO 1115 CFM AND THE 16x14 DUCT TO 630 CFM.
3. CAP EXISTING 60x18 EXHAUST DUCT BEHIND SHAFT WALL. CLEARLY LABEL THE DUCT "LOCKER EXHAUST DUCT, ABANDONED IN PLACE".
4. EXISTING DUCTWORK ABANDONED IN PLACE.
5. EXISTING EXHAUST GRILLE. CLEAN AND BALANCE TO 900 CFM. IF BALANCE DAMPERS ARE NOT PRESENT AT EACH GRILLE THEN BALANCE TOTAL EXHAUST TO 3600 CFM.
6. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
7. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
8. 14x14 DUCT UP TO EXISTING 36x36 DUCT AND RELIEF HOOD ABOVE.
9. 30x18 RELIEF DUCT UP TO GRAVITY RELIEF HOOD ON ROOF. REFER TO DETAIL ON SHEET M5.3.
10. ROUTE CONDENSATE PIPING AS HIGH AS POSSIBLE. COORDINATE EXACT ROUTING AND ELEVATION WITH EXISTING CONDITIONS.
11. REMOVE EXISTING ELBOW & SUPPLY GRILLE FOR CONNECTION OF NEW DUCTWORK.
12. NOT USED.
13. ROUTE NEW 3 LPC DN – REFER TO SHEET M2.0B FOR CONTINUATION.
14. NOT USED.
15. NOT USED.
16. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
17. NOT USED
18. ROUTE NEW 6 LPS TO PROVIDE CODE REQUIRED CLEARANCE FOR EXISTING ELECTRICAL EQUIPMENT.
19. NOT USED.
20. PROVIDE 24x12 RETURN AIR OPENING BETWEEN LOBBY CEILING PLENUM AND FITNESS SOFFIT RETURN PLENUM.
21. LOCATE HC-215 STEAM TRAP IN STORAGE ROOM NEXT TO HC-208 STEAM TRAP.

SHEET:	OF:
I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

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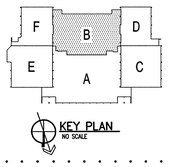
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Basement Level HVAC Plan - Zone 'B'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

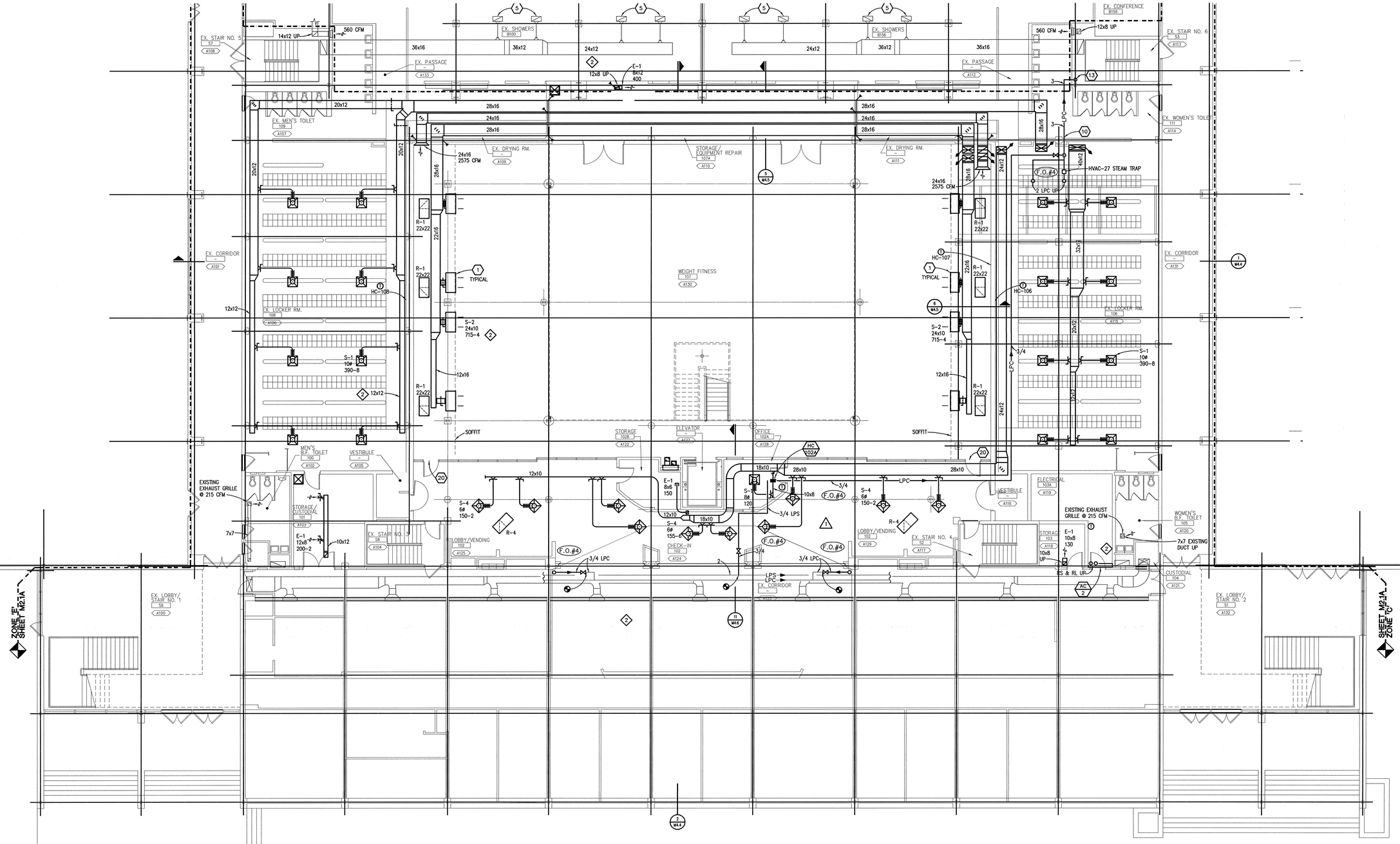
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M2.0B

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HVAC GENERAL NOTES:

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TRUE NORTH

FIRST LEVEL HVAC PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

CONSTRUCTION NOTES:

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I.M. WEST	SHEET: OF:
ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY	SCALE: AS NOTED
PHYSICAL PLANT DIVISION	DWG NO: B-151-76
ENGINEERING & ARCHITECTURAL SERVICES	CARD NO: CP 03111

TMP ARCHITECTURE

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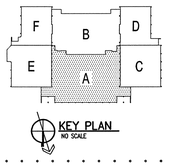
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level HVAC Plan - Zone 'A'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
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DRAWN	DBC
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PROJECT NO.

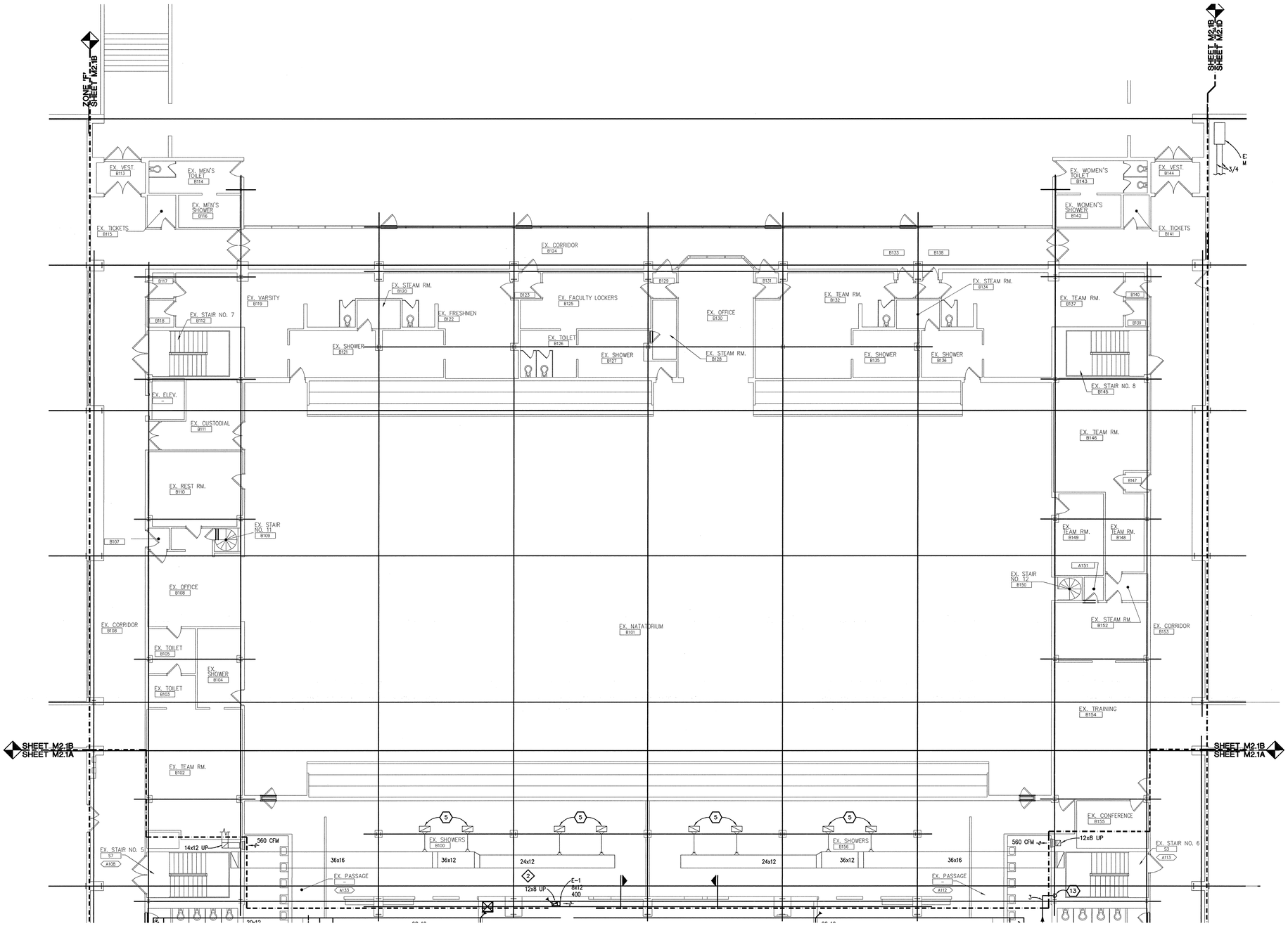
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M2.1A

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TRUE NORTH

FIRST LEVEL HVAC PLAN - ZONE 'B'

SCALE: 1/8" = 1' - 0"

0 1 4 8

CONSTRUCTION NOTES:

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11. REMOVE EXISTING ELBOW & SUPPLY GRILLE FOR CONNECTION OF NEW DUCTWORK.
12. NOT USED.
13. ROUTE NEW 3 LPC DN – REFER TO SHEET M2.0B FOR CONTINUATION.
14. NOT USED.
15. NOT USED.

    CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
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17. ROUTE NEW 6 LPS TO PROVIDE CODE REQUIRED CLEARANCE FOR EXISTING ELECTRICAL EQUIPMENT.
18. NOT USED.
19. PROVIDE 24x12 RETURN AIR OPENING BETWEEN LOBBY CEILING PLENUM AND FITNESS SOFFIT RETURN PLENUM.
20. LOCATE HC-215 STEAM TRAP IN STORAGE ROOM NEXT TO HC-208 STEAM TRAP.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
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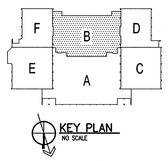
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level HVAC Plan - Zone 'B'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DBC
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APPROVED	DJE

PROJECT NO.

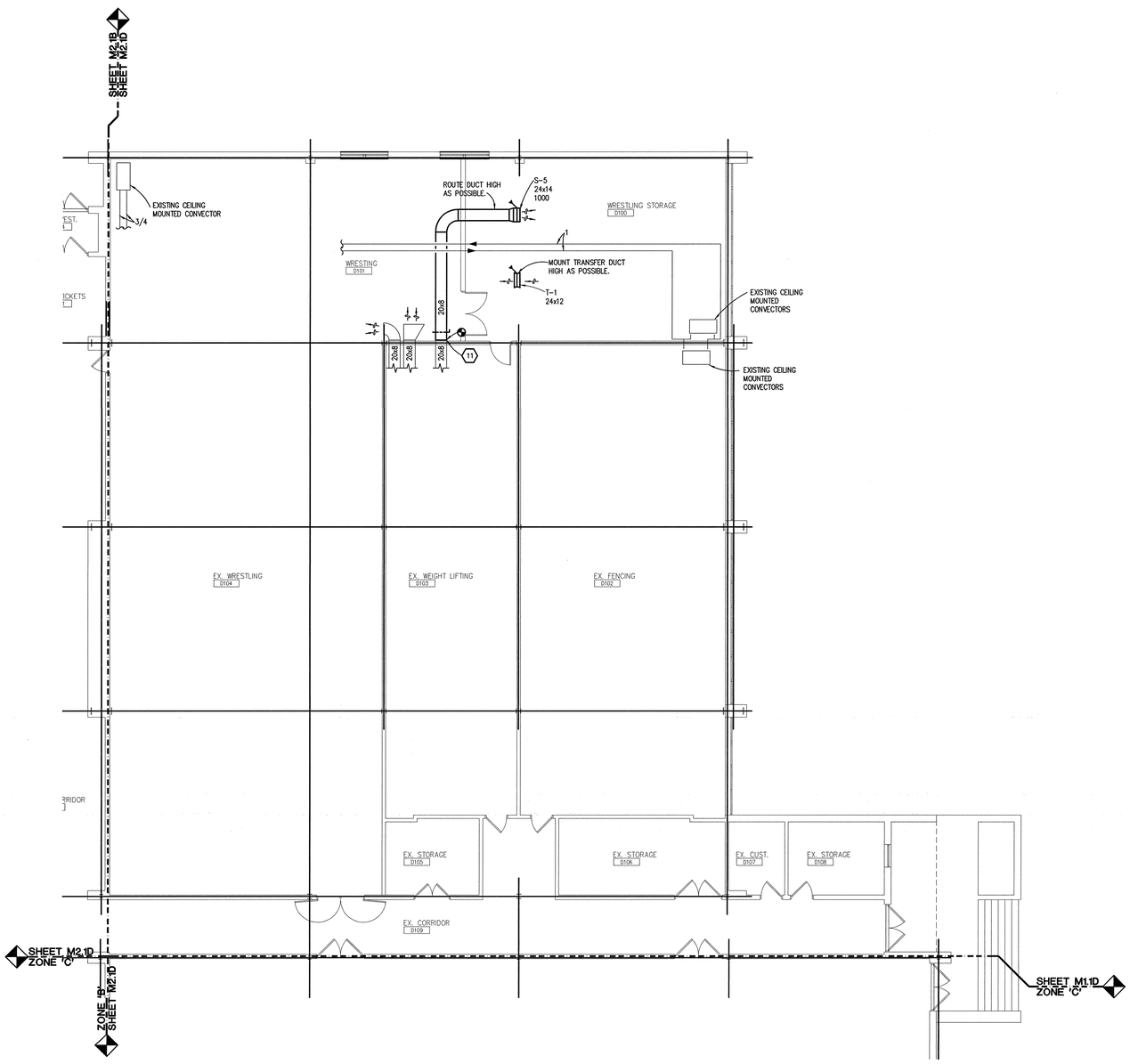
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M2.1B

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TRUE NORTH

FIRST LEVEL HVAC PLAN - ZONE 'D'

SCALE: 1/8" = 1' - 0"

0 1 4 8

HVAC GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE SHEET METAL AND PIPING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITRED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
3. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK AND PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
5. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS, ETC. WITH ARCHITECTURAL TRADES.
6. CONTRACTOR SHALL MOUNT THERMOSTATS 48" A.F.F. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHEN INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.
7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
8. BRANCH DUCTWORK UPSTREAM OF SUPPLY TERMINAL UNITS SHALL BE BOX INLET SIZE NOTED IN THE SCHEDULE UNLESS OTHERWISE NOTED.
9. BRANCH DUCTWORK DOWNSTREAM OF RETURN TERMINAL UNITS SHALL TRANSITION TO BOX INLET SIZE NOTED IN SCHEDULE UNLESS OTHERWISE NOTED.
10. CONTRACTOR SHALL NOT LOCATE PIPING BELOW DUCT MOUNTED AIR TERMINAL UNITS, TERMINAL UNIT HEATING COILS, OR OTHER EQUIPMENT.
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DETAILS.
12. COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO TERMINAL UNITS, BALANCING DAMPERS, TERMINAL UNIT HEATING COIL PIPING, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

CONSTRUCTION NOTES:

1. DIFFUSER MOUNTED IN THE VERTICAL FACE OF SOFFIT.
2. TRANSITION EXISTING 26x9 DUCT TO 16x14 AND CONNECT WITH EXISTING 16x14 DUCT IN 32x14 DUCT. TRANSITION 32x14 TO FAN INLET. PROVIDE MANUAL BALANCING DAMPERS AT CONNECTION TO EACH EXISTING DUCT. BALANCE THE 26x9 DUCT TO 1115 CFM AND THE 16x14 DUCT TO 630 CFM.
3. CAP EXISTING 60x18 EXHAUST DUCT BEHIND SHAFT WALL. CLEARLY LABEL THE DUCT "LOCKER EXHAUST DUCT, ABANDONED IN PLACE".
4. EXISTING DUCTWORK ABANDONED IN PLACE.
5. EXISTING EXHAUST GRILLE. CLEAN AND BALANCE TO 900 CFM. IF BALANCE DAMPERS ARE NOT PRESENT AT EACH GRILLE THEN BALANCE TOTAL EXHAUST TO 3600 CFM.
6. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
7. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
8. 14x14 DUCT UP TO EXISTING 36x36 DUCT AND RELIEF HOOD ABOVE.
9. 30x18 RELIEF DUCT UP TO GRAVITY RELIEF HOOD ON ROOF. REFER TO DETAIL ON SHEET M5.3.
10. ROUTE CONDENSATE PIPING AS HIGH AS POSSIBLE. COORDINATE EXACT ROUTING AND ELEVATION WITH EXISTING CONDITIONS.
11. REMOVE EXISTING ELBOW & SUPPLY GRILLE FOR CONNECTION OF NEW DUCTWORK.
12. NOT USED.
13. ROUTE NEW 3 LPC DN – REFER TO SHEET M2.0B FOR CONTINUATION.
14. NOT USED.
15. NOT USED.
16. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
17. NOT USED
18. ROUTE NEW 6 LPS TO PROVIDE CODE REQUIRED CLEARANCE FOR EXISTING ELECTRICAL EQUIPMENT.
19. NOT USED.
20. PROVIDE 24x12 RETURN AIR OPENING BETWEEN LOBBY CEILING PLENUM AND FITNESS SOFFIT RETURN PLENUM.
21. LOCATE HC-215 STEAM TRAP IN STORAGE ROOM NEXT TO HC-208 STEAM TRAP.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
1191 WEST SQUARE LAKE ROAD - BOX 289
BLOOMFIELD HILLS - MICHIGAN - 48303
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Troy, Michigan 48098-2676
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www.pbainc.com
PBA Project No. 203205

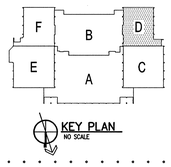
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level HVAC Plan - Zone 'D'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

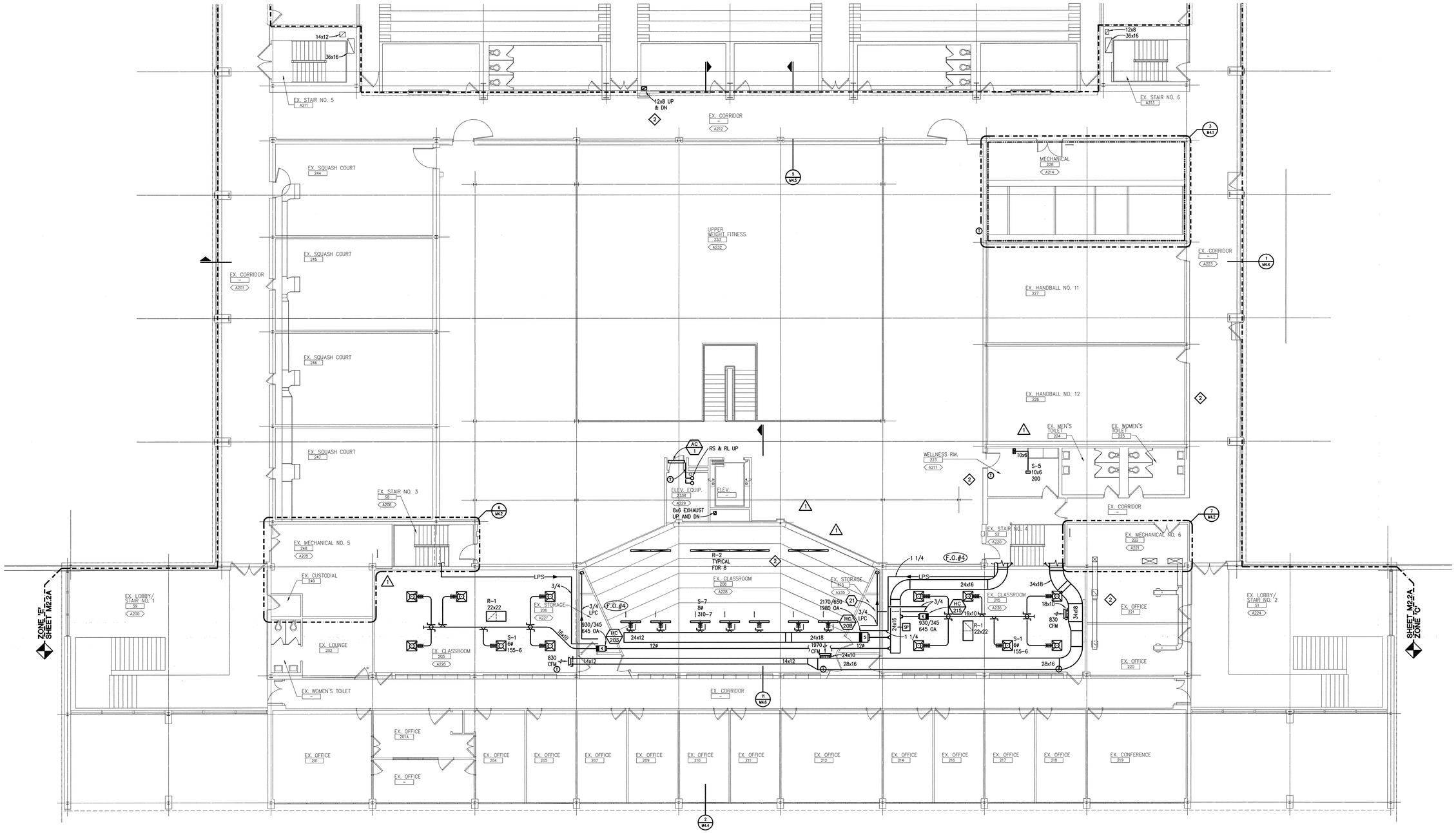
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M2.1D

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HVAC GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE SHEET METAL AND PIPING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITRED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
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3. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK AND PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
5. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS, ETC. WITH ARCHITECTURAL TRADES.
6. CONTRACTOR SHALL MOUNT THERMOSTATS 48" A.F.F. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHEN INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.
7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
8. BRANCH DUCTWORK UPSTREAM OF SUPPLY TERMINAL UNITS SHALL BE BOX INLET SIZE NOTED IN THE SCHEDULE UNLESS OTHERWISE NOTED.
9. BRANCH DUCTWORK DOWNSTREAM OF RETURN TERMINAL UNITS SHALL TRANSITION TO BOX INLET SIZE NOTED IN SCHEDULE UNLESS OTHERWISE NOTED.
10. CONTRACTOR SHALL NOT LOCATE PIPING BELOW DUCT MOUNTED AIR TERMINAL UNITS, TERMINAL UNIT HEATING COILS, OR OTHER EQUIPMENT.
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DETAILS.
12. COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO TERMINAL UNITS, BALANCING DAMPERS, TERMINAL UNIT HEATING COIL PIPING, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

TRUE NORTH

SECOND LEVEL HVAC PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

CONSTRUCTION NOTES:

1. DIFFUSER MOUNTED IN THE VERTICAL FACE OF SOFFIT.
2. TRANSITION EXISTING 26x9 DUCT TO 16x14 AND CONNECT WITH EXISTING 16x14 DUCT IN 32x14 DUCT. TRANSITION 32x14 TO FAN INLET. PROVIDE MANUAL BALANCING DAMPERS AT CONNECTION TO EACH EXISTING DUCT. BALANCE THE 26x9 DUCT TO 1115 CFM AND THE 16x14 DUCT TO 630 CFM.
3. CAP EXISTING 60x18 EXHAUST DUCT BEHIND SHAFT WALL. CLEARLY LABEL THE DUCT "LOCKER EXHAUST DUCT, ABANDONED IN PLACE".
4. EXISTING DUCTWORK ABANDONED IN PLACE.
5. EXISTING EXHAUST GRILLE. CLEAN AND BALANCE TO 900 CFM. IF BALANCE DAMPERS ARE NOT PRESENT AT EACH GRILLE THEN BALANCE TOTAL EXHAUST TO 3600 CFM.
6. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
7. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
8. 14x14 DUCT UP TO EXISTING 36x36 DUCT AND RELIEF HOOD ABOVE.
9. 30x18 RELIEF DUCT UP TO GRAVITY RELIEF HOOD ON ROOF. REFER TO DETAIL ON SHEET M5.3.
10. ROUTE CONDENSATE PIPING AS HIGH AS POSSIBLE. COORDINATE EXACT ROUTING AND ELEVATION WITH EXISTING CONDITIONS.
11. REMOVE EXISTING ELBOW & SUPPLY GRILLE FOR CONNECTION OF NEW DUCTWORK.
12. NOT USED.
13. ROUTE NEW 3 LPC DN – REFER TO SHEET M2.0B FOR CONTINUATION.
14. NOT USED.
15. NOT USED.
16. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
17. NOT USED
18. ROUTE NEW 6 LPS TO PROVDE CODE REQUIRED CLEARANCE FOR EXISTING ELECTRICAL EQUIPMENT.
19. NOT USED.
20. PROVIDE 24x12 RETURN AIR OPENING BETWEEN LOBBY CEILING PLENUM AND FITNESS SOFFIT RETURN PLENUM.
21. LOCATE HC-215 STEAM TRAP IN STORAGE ROOM NEXT TO HC-208 STEAM TRAP. F.O.#4

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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BLOOMFIELD HILLS - MICHIGAN - 48303
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www.pbainet.com
PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Second Level HVAC Plan - Zone 'A'

F B D E A C

KEY PLAN NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

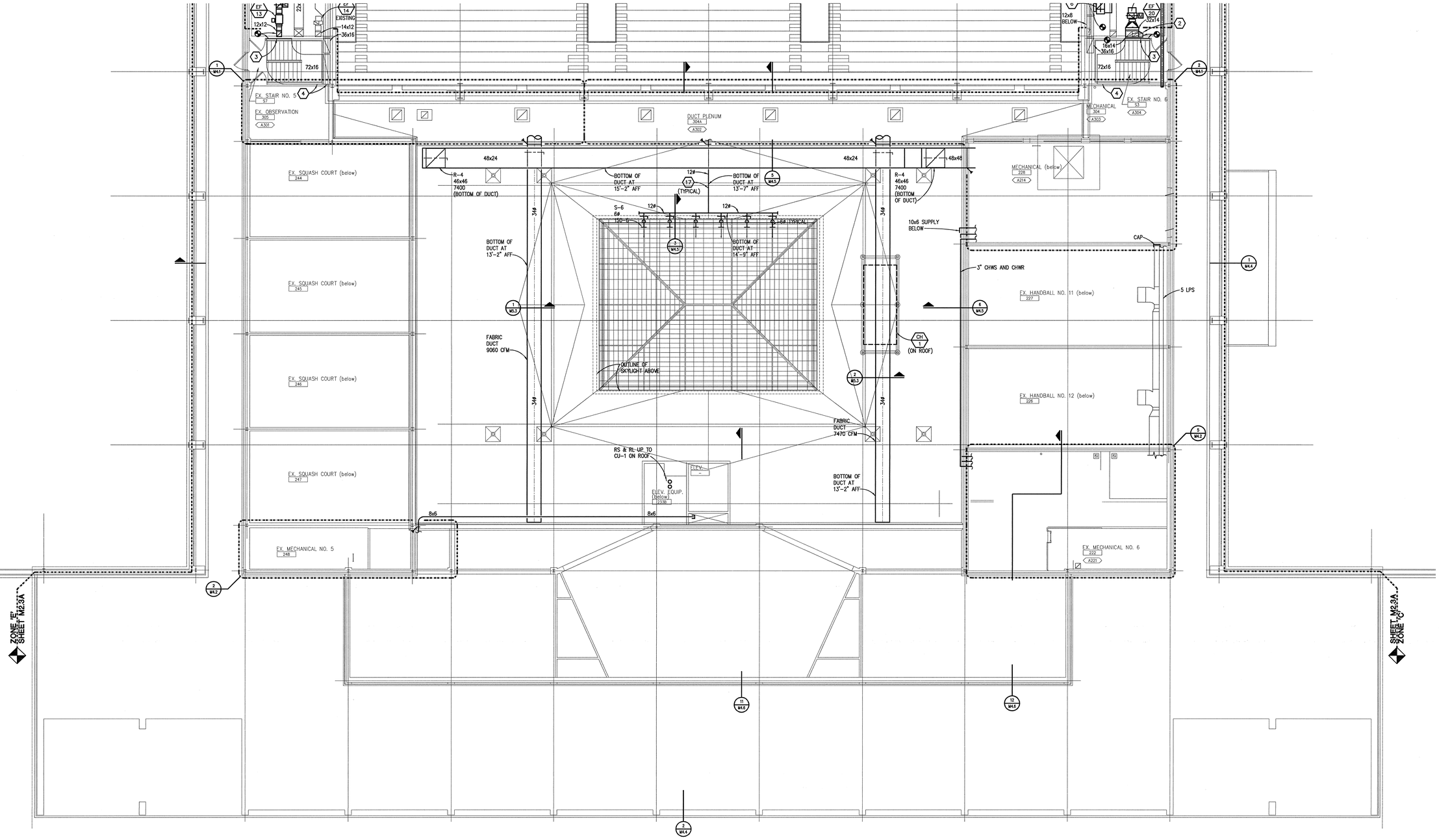
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M2.2A

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HVAC GENERAL NOTES:

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11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DETAILS.
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TRUE NORTH

THIRD LEVEL HVAC PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

CONSTRUCTION NOTES:

1. DIFFUSER MOUNTED IN THE VERTICAL FACE OF SOFFIT.
2. TRANSITION EXISTING 26x9 DUCT TO 16x14 AND CONNECT WITH EXISTING 16x14 DUCT IN 32x14 DUCT. TRANSITION 32x14 TO FAN INLET. PROVIDE MANUAL BALANCING DAMPERS AT CONNECTION TO EACH EXISTING DUCT. BALANCE THE 26x9 DUCT TO 1115 CFM AND THE 16x14 DUCT TO 630 CFM.
3. CAP EXISTING 60x18 EXHAUST DUCT BEHIND SHAFT WALL. CLEARLY LABEL THE DUCT "LOCKER EXHAUST DUCT, ABANDONED IN PLACE".
4. EXISTING DUCTWORK ABANDONED IN PLACE.
5. EXISTING EXHAUST GRILLE. CLEAN AND BALANCE TO 900 CFM. IF BALANCE DAMPERS ARE NOT PRESENT AT EACH GRILLE THEN BALANCE TOTAL EXHAUST TO 3600 CFM.
6. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
7. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
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9. 30x18 RELIEF DUCT UP TO GRAVITY RELIEF HOOD ON ROOF. REFER TO DETAIL ON SHEET M5.3.
10. ROUTE CONDENSATE PIPING AS HIGH AS POSSIBLE. COORDINATE EXACT ROUTING AND ELEVATION WITH EXISTING CONDITIONS.
11. REMOVE EXISTING ELBOW & SUPPLY GRILLE FOR CONNECTION OF NEW DUCTWORK.
12. NOT USED.
13. ROUTE NEW 3 LPC DN – REFER TO SHEET M2.0B FOR CONTINUATION.
14. NOT USED.
15. NOT USED.
16. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
17. NOT USED
18. ROUTE NEW 6 LPS TO PROVIDE CODE REQUIRED CLEARANCE FOR EXISTING ELECTRICAL EQUIPMENT.
19. NOT USED.
20. PROVIDE 24x12 RETURN AIR OPENING BETWEEN LOBBY CEILING PLENUM AND FITNESS SOFFIT RETURN PLENUM.
21. LOCATE HC-215 STEAM TRAP IN STORAGE ROOM NEXT TO HC-208 STEAM TRAP.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

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PBA Project No. 223025

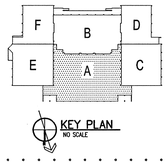
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Third Level HVAC Plan - Zone 'A'



KEY PLAN
NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

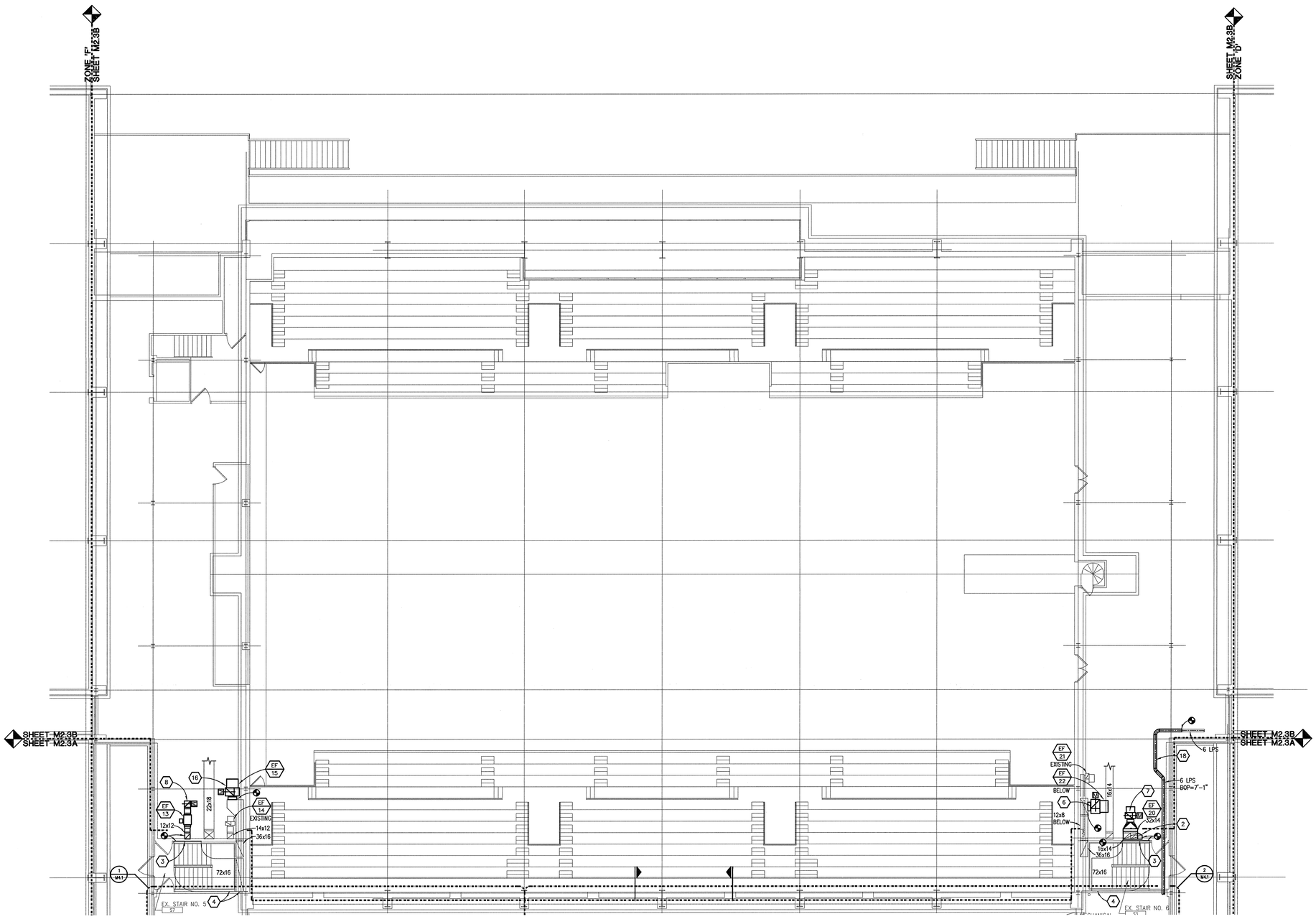
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M2.3A

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HVAC GENERAL NOTES:

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TRUE NORTH

THIRD LEVEL HVAC PLAN - ZONE 'B'

SCALE: 1/8" = 1' - 0"

0 1 4 8

CONSTRUCTION NOTES:

1. DIFFUSER MOUNTED IN THE VERTICAL FACE OF SOFFIT.
2. TRANSITION EXISTING 26x9 DUCT TO 16x14 AND CONNECT WITH EXISTING 16x14 DUCT IN 32x14 DUCT. TRANSITION 32x14 TO FAN INLET. PROVIDE MANUAL BALANCING DAMPERS AT CONNECTION TO EACH EXISTING DUCT. BALANCE THE 26x9 DUCT TO 1115 CFM AND THE 16x14 DUCT TO 630 CFM.
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11. REMOVE EXISTING ELBOW & SUPPLY GRILLE FOR CONNECTION OF NEW DUCTWORK.
12. NOT USED.
13. ROUTE NEW 3 LPC DN – REFER TO SHEET M2.0B FOR CONTINUATION.
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19. NOT USED.
20. PROVIDE 24x12 RETURN AIR OPENING BETWEEN LOBBY CEILING PLENUM AND FITNESS SOFFIT RETURN PLENUM.
21. LOCATE HC-215 STEAM TRAP IN STORAGE ROOM NEXT TO HC-208 STEAM TRAP.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

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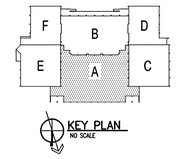
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Third Level HVAC Plan - Zone 'B'



KEY PLAN
NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

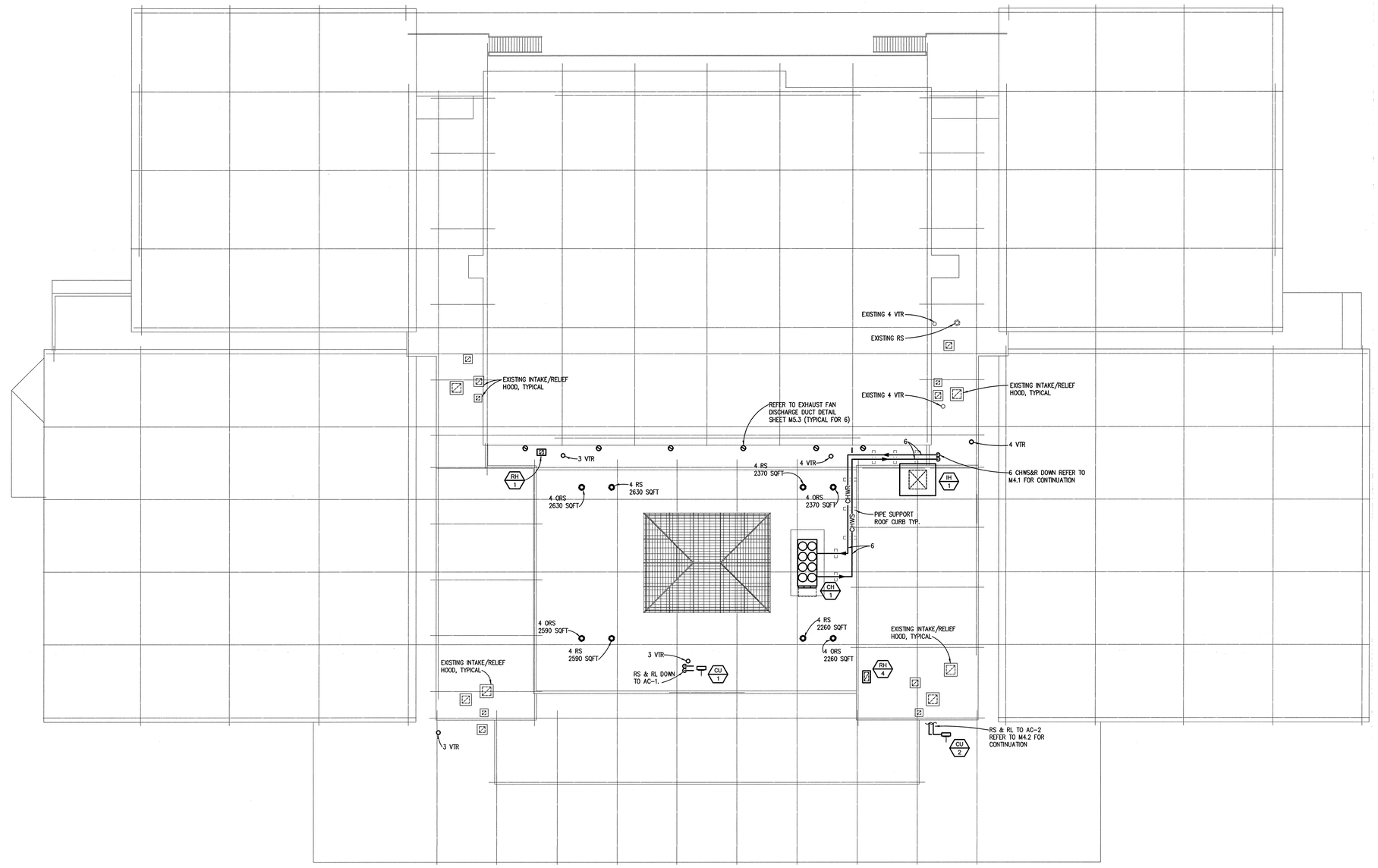
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M2.3B

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TRUE NORTH

MECHANICAL ROOF PLAN

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

0 2 8 16

HVAC GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE SHEET METAL AND PIPING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITRED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
3. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK AND PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
5. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS, ETC. WITH ARCHITECTURAL TRADES.
6. CONTRACTOR SHALL MOUNT THERMOSTATS 48" A.F.F. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHEN INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.
7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
8. BRANCH DUCTWORK UPSTREAM OF SUPPLY TERMINAL UNITS SHALL BE BOX INLET SIZE NOTED IN THE SCHEDULE UNLESS OTHERWISE NOTED.
9. BRANCH DUCTWORK DOWNSTREAM OF RETURN TERMINAL UNITS SHALL TRANSITION TO BOX INLET SIZE NOTED IN SCHEDULE UNLESS OTHERWISE NOTED.
10. CONTRACTOR SHALL NOT LOCATE PIPING BELOW DUCT MOUNTED AIR TERMINAL UNITS, TERMINAL UNIT HEATING COILS, OR OTHER EQUIPMENT.
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DETAILS.
12. COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO TERMINAL UNITS, BALANCING DAMPERS, TERMINAL UNIT HEATING COIL PIPING, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

CONSTRUCTION NOTES:

1. DIFFUSER MOUNTED IN THE VERTICAL FACE OF SOFFIT.
2. TRANSITION EXISTING 26x9 DUCT TO 16x14 AND CONNECT WITH EXISTING 16x14 DUCT IN 32x14 DUCT. TRANSITION 32x14 TO FAN INLET. PROVIDE MANUAL BALANCING DAMPERS AT CONNECTION TO EACH EXISTING DUCT. BALANCE THE 26x9 DUCT TO 1115 CFM AND THE 16x14 DUCT TO 630 CFM.
3. CAP EXISTING 60x18 EXHAUST DUCT BEHIND SHAFT WALL. CLEARLY LABEL THE DUCT "LOCKER EXHAUST DUCT, ABANDONED IN PLACE".
4. EXISTING DUCTWORK ABANDONED IN PLACE.
5. EXISTING EXHAUST GRILLE. CLEAN AND BALANCE TO 900 CFM. IF BALANCE DAMPERS ARE NOT PRESENT AT EACH GRILLE THEN BALANCE TOTAL EXHAUST TO 3600 CFM.
6. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
7. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
8. 14x14 DUCT UP TO EXISTING 36x36 DUCT AND RELIEF HOOD ABOVE.
9. 30x18 RELIEF DUCT UP TO GRAVITY RELIEF HOOD ON ROOF. REFER TO DETAIL ON SHEET M5.3.
10. ROUTE CONDENSATE PIPING AS HIGH AS POSSIBLE. COORDINATE EXACT ROUTING AND ELEVATION WITH EXISTING CONDITIONS.
11. REMOVE EXISTING ELBOW & SUPPLY GRILLE FOR CONNECTION OF NEW DUCTWORK.
12. NOT USED.
13. ROUTE NEW 3 LPC DN – REFER TO SHEET M2.0B FOR CONTINUATION.
14. NOT USED.
15. NOT USED.
16. CONNECT EXHAUST FAN INLET TO EXISTING EXHAUST DUCTWORK. TRANSITION FAN OUTLET TO 24x24 DUCT AND CONNECT TO EXISTING 24x24 DUCT AND RELIEF HOOD ABOVE.
17. NOT USED
18. ROUTE NEW 6 LPS TO PROVIDE CODE REQUIRED CLEARANCE FOR EXISTING ELECTRICAL EQUIPMENT.
19. NOT USED.
20. PROVIDE 24x12 RETURN AIR OPENING BETWEEN LOBBY CEILING PLENUM AND FITNESS SOFFIT RETURN PLENUM.
21. LOCATE HC-215 STEAM TRAP IN STORAGE ROOM NEXT TO HC-208 STEAM TRAP.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
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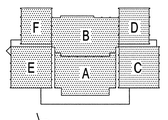
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Mechanical Roof Plan



KEY PLAN
NO SCALE

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1-28-04	FINAL REVIEW

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CHECKED	NPB
APPROVED	DJE

PROJECT NO.

CP03111

TMP PROJECT NO. 03118

SHEET NO.

M2.4

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FAN SCHEDULE

UNIT I.D.	SYSTEM SERVED	TYPE	AIRFLOW CFM	E.S.P. IN. W.G.	RPM	MODULATION TYPE	CLASS	OUTLET VEL FPM	MOTOR				ELECTRICAL		MODEL NO.	REMARKS
									BHP	HP	RPM	DRIVE TYPE	VOLTS	PHASE		
RF-27	HVAC-27	MIXED FLOW	20,000	0.77	916	CV	II	1775	5.82	7 1/2	1750	BELT	460	3	QEI-33-II-75	
RF-28	HVAC-28	IN-LINE	4,030	0.75	1,195	CV	---	---	1.18	1 1/2	1750	BELT	460	3	BSQ-180-15	
VF-1	SKYLIGHT	IN-LINE	900	2.10	2,656	CV	---	---	0.94	1 1/2	1750	BELT	460	3	BSQ-90-10	
EF-1	POOL	CENTRIFUGAL	4660	1.20	1122	CV	---	2091	1.67	2	1750	BELT	460	3	SWB-120-20	
EF-2	POOL	CENTRIFUGAL	4660	1.20	1122	CV	---	2091	1.67	2	1750	BELT	460	3	SWB-120-20	
EF-3	POOL	CENTRIFUGAL	4660	1.20	1122	CV	---	2091	1.67	2	1750	BELT	460	3	SWB-120-20	
EF-4	POOL	CENTRIFUGAL	4660	1.20	1122	CV	---	2091	1.67	2	1750	BELT	460	3	SWB-120-20	
EF-5	POOL	CENTRIFUGAL	4660	1.20	1122	CV	---	2091	1.67	2	1750	BELT	460	3	SWB-120-20	
EF-6	POOL	CENTRIFUGAL	4660	1.20	1122	CV	---	2091	1.67	2	1750	BELT	460	3	SWB-120-20	
EF-13	TEAM LOCKERS	IN-LINE	720	0.30	1456	CV	---	---	0.16	1/4	1750	BELT	120	1	BSQ-90-4	
EF-15	MEN'S SHOWER	CENTRIFUGAL	4380	0.70	828	CV	---	3103	2.21	3	1750	BELT	460	3	SFB-15-30	NOTE 3
EF-20	TEAM LOCKERS	CENTRIFUGAL	6700	0.35	521	CV	---	2788	2.26	3	1750	BELT	460	3	SFB-20-30	
EF-22	WOMEN'S SHOWER	CENTRIFUGAL	4380	0.70	828	CV	---	3103	2.21	3	1750	BELT	460	3	SFB-15-30	NOTE 3
EF-25	TOILET ROOMS	IN-LINE	1330	0.88	1508	CV	---	---	0.4	1/2	1750	BELT	460	3	BSQ-130-5	
EF-31	STORAGE	IN-LINE	130	0.25	1052	CV	---	---	0.04	1/4	1750	BELT	120	1	BSQ-70-4	
EF-32	JC, STORAGE	IN-LINE	400	0.25	1180	CV	---	---	0.09	1/4	1750	BELT	120	1	BSQ-90-4	

NOTE 1. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED.
2. PROVIDE CORROSION RESISTANT TO ALL INTERIOR COMPONETS. REFER TO SPECIFICATIONS.
3. AIRFLOW INDICATED IS BASED ON CURRENT DUCT LEAKAGE AND LEAKAGE CALCULATED AT DESIGN AIRFLOW OF 3600 CFM (TOTAL AT GRILLES). BALANCE THE FAN FLOW TO THE FLOW REQUIRED TO PRODUCE 3600 CFM OF EXHASUT AT THE GRILLES.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

UNIT I.D.	FACE SIZE	NECK SIZE	FRAME TYPE	ACCESSORY	CONSTRUCTION	FINISH	MODEL NO.	REMARKS
S-1	24x24	SEE PLANS	SEE PLAN	---	ALUMINUM	WHITE	OMNI-AA	
S-2	48x4 1/4 (1 SLOT)	24x10	22	NOTE 4	ALUMINUM	WHITE	FTPI-10-JT	
S-4	24x24	SEE PLANS	LAY-IN	---	ALUMINUM	WHITE	OMNI-AA	
S-5	SEE PLANS	SEE PLANS	SEE PLAN	---	ALUMINUM	WHITE	300 FS	
S-6	6"ø	6"ø	WALL	---	ALUMINUM	WHITE	PK	MANUFACTURED BY SEIHO
S-7	48x4 1/4 (1 SLOT)	8"ø	16	---	ALUMINUM	WHITE	FTPI-15-HT	
R-1	NECK SIZE + 2	SEE PLAN	SEE PLANS	---	ALUMINUM	WHITE	PAR	
R-2	48x4 1/4 (1 SLOT)	---	16	NOTE 3	ALUMINUM	WHITE	FBR-15	
R-4	42x42	42x42	DUCT	---	ALUMINUM	WHITE	30 RL	
E-1	NECT SIZE + 1 3/4	SEE PLANS	SEE PLANS	---	ALUMINUM	WHITE	350 ZFL	
T-1	NECT SIZE + 1 3/4	SEE PLAN	WALL	--	ALUMINUM	WHITE	350 RL	

NOTE 1. MODEL NUMBERS ARE TITUS UNLESS OTHERWISE NOTED.
3. PROVIDE RETURN HOOD/LIGHT SHIELD GALVANIZED STEEL, PAINTED FLAT BLACK.
4. PROVIDE APPOSED BLADE DAMPER ADJUSTABLE AT FACE OF DIFFUSER. MOUNTED ON NECK.

DUCT MOUNTED STEAM HUMIDIFIER SCHEDULE

UNIT I.D.	SYSTEM SERVED	CAPACITY LBS/HR	STEAM PRESS. PSIG	LENGTH OF DIST. HEADER	NUMBER OF MANIFOLDS	TYPE OF CONTROL	LOCATION (NOTE 2)		MODEL NO.	REMARKS
							UPSTREAM	DOWNSTREAM		
H-28	HVAC-28	55	5	24	2	PNEUMATIC	24	66	AMA 91	1/4 INCH ORIFICE

NOTE 1. MODEL NUMBERS ARE ARMSTRONG UNLESS OTHERWISE NOTED.
2. DIMENSIONS SHOWN ARE MINIMUM STRAIGHT LENGTHS (INCHES) REQUIRED UPSTREAM AND DOWNSTREAM OF HUMIDIFIER LOCATIONS.
3. CONTROL SIGNAL 3-13# SPRING

INTAKE HOOD SCHEDULE

UNIT I.D.	SYSTEM SERVED	CFM	THROAT SIZE (IN.)	HOOD INTAKE VEL. (FPM)	THROAT VEL. (FPM)	STATIC PRESS. DROP (IN. W.G.)	HOOD SIZE			CURB HEIGHT (IN.)	HOOD CONSTR.	MODEL NO.	REMARKS
							WIDTH IN.	LENGTH IN.	HEIGHT IN.				
IH-1	HVAC-27	30,000	72x78	380	769	0.09	128	132	32 1/2	18	ALUMINUM	FHI	

NOTE 1. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED.
2. PROVIDE WITH BIRD SCREEN.

RELIEF HOOD SCHEDULE

UNIT I.D.	SYSTEM SERVED	CFM	THROAT SIZE (IN.)	THROAT VEL. (FPM)	STATIC PRESS. DROP (IN. W.G.)	HOOD SIZE			CURB HEIGHT (IN.)	HOOD CONSTR.	MODEL NO.	REMARKS
						WIDTH IN.	LENGTH IN.	HEIGHT IN.				
RH-1	POOL EXHAUST	1300	16x16	747	0.084	26	36	16	18	ALUMINUM	FHR	
RH-4	HVAC-28	4030	18x36	895	0.087	28	48	16	18	ALUMINUM	FHR	

NOTE 1. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED.
2. PROVIDE WITH BIRD SCREEN.

MODULAR AIR HANDLING UNIT COMPONENT SCHEDULE

UNIT I.D.	AREA SERVED	POSITION NO. 1	POSITION NO. 2	POSITION NO. 3	POSITION NO. 4	POSITION NO. 5	POSITION NO. 6	POSITION NO. 7	POSITION NO. 8	POSITION NO. 9	POSITION NO. 10	POSITION NO. 11	POSITION NO. 12	MAXIMUM UNIT LENGTH	MAXIMUM UNIT HEIGHT	MAXIMUM UNIT WIDTH	REMARKS
HVAC-27	FITNESS	MIXING BOX	ACCESS	FILTER	ACCESS	STEAM COIL	ACCESS	COOLING COIL	ACCESS	SUPPLY FAN	DISCHARGE PLENUM	N/A	N/A	34'-11"	7'-6"	10'-0"	
HVAC-28	CLASSROOMS	MIXING BOX	ACCESS	FILTER	STEAM COIL	ACCESS	TURNING	TURNING	ACCESS	COOLING COIL	ACCESS	SUPPLY FAN	DISCHARGE PLENUM	16'-6"	8'-6"	6'-0"	STACKED UNIT

NOTE 1. MODULES SELECTED BASED ON YORK INDOOR MODULAR CLIMATE CHANGER AIR HANDLING UNIT.
2. POSITION NUMBERS ARE INDICATED IN THE DIRECTION OF AIRFLOW FROM RETURN AIR INLET TO SUPPLY AIR DISCHARGE.

AIR HANDLING UNIT SUPPLY AIR FAN SCHEDULE

UNIT I.D.	SYSTEM SERVED	TYPE	AIRFLOW CFM	MINIMUM OUTSIDE AIR FLOW CFM	E.S.P. IN. W.G.	SUCTION S.P. IN. W.G.	T.S.P. IN. W.G.	MIN. WHEEL DIAMETER INCHES	RPM	MODULATION TYPE	OUTLET VEL. FPM	FAN CLASS	MOTOR				ELECTRICAL		MODEL NO.	REMARKS
													BHP	HP	RPM	DRIVE TYPE	VOLTS	PHASE		
SF-27	HVAC-27	PLENUM	31,850	12,140	2.0	---	4.85	---	1080	NONE	---	II	33.9	40	1750	BELT	460	3	PL-391	
SF-28	HVAC-28	PLENUM	4,030	4,030	1.2	---	5.21	---	3095	VFD	---	II	---	5.0	1750	BELT	460	3	PL-161	

NOTE 1. MODEL NUMBERS ARE YORK UNLESS OTHERWISE NOTED.
2. REFER TO TEMPERATURE CONTROL DRAWINGS FOR OUTSIDE AIR CONTROL SEQUENCE.
3. REFER TO AIR HANDLING UNIT AIR FILTER SCHEDULE FOR AIR PRESSURE DROP TO BE USED FOR TOTAL STATIC PRESSURE CALCULATIONS.

STEAM HEATING COIL SCHEDULE

UNIT I.D.	SYSTEM SERVED	CAPACITY MBH	AIR				MIN FACE AREA SQ. FT.	STEAM				MODEL NO.	REMARKS
			AIRFLOW CFM	E.D.B. ° F	L.D.B. ° F	MAX A.P.D. IN. W.G.		INLET PRESS. PSIG AT CONTROL VA.	COIL INLET PRESS. PSIG	CONTROL VA. P.D. PSIG (EA.)	FLOW LBS/HR		
HC-27	HVAC-27	1804.5	31,850	44	96	0.26	52.9	10	5	5	1860	WING - IFB	VERTICAL INTEGRAL FACE & BYPASS, NOTE 2 & 3
HC-28	HVAC-28	376	4030	-10.0	76.7	0.85	5.5	10	5	5	392	WING-IFB	NORIZONTAL INTEGRAL FACE & BYPASS, NOTE 2 &3

NOTE 1. MODEL NUMBERS ARE MERLO UNLESS OTHERWISE NOTED.
2. PROVIDE ANTI-STRATIFICATION BAFFLE
3. INSULATE STEAM CONDENSATE AND IFB COIL HEADERS INSIDE OF HVAC UNIT. REFER TO SPECIFICATIONS.

AIR HANDLING UNIT CHILLED WATER COOLING COIL SCHEDULE

UNIT I.D.	SYSTEM SERVED	MIN NO. ROWS	TOTAL CAPACITY MBH	AIR						MIN FACE AREA SQ. FT.	WATER				CONTROL VALVE W.P.D. FT. HEAD	MODEL NO.	REMARKS
				AIRFLOW CFM	E.D.B. ° F	E.W.B. ° F	L.D.B. ° F	L.W.B. ° F	MAX A.P.D. IN. W.G.		FLOW GPM	E.W.T. ° F	L.W.T. ° F	MAX W.P.D. FT. HEAD			
CC-27	HVAC-27	8	1,269	31,850	81.0	67.0	54.5	54.1	0.82	66.6	234	44	56	14.7	15	--	
CC-28	HVAC-28	8	271	4,030	90.0	73.0	51.4	51.4	1.14	8.7	49	44	56	15.4	15	--	

NOTE 1. MODEL NUMBERS ARE YORK UNLESS OTHERWISE NOTED.
2. COIL SELECTIONS BASED ON .00025 FOULING FACTOR.
3. COIL SELECTIONS BASED ON 30% ETHYLENE GLYCOL SOLUTION.

AIR HANDLING UNIT FILTER SCHEDULE

UNIT I.D.	SYSTEM SERVED	TYPE	AIRFLOW CFM	AIR PRESS. DROP		EFFICIENCIES		FILTER MEDIA					HOUSING				MODEL NO.	REMARKS
				INITIAL IN. W.G.	DIRTY IN. W.G.	ARR. %	D.S. %	QUAN.	WIDTH IN.	HEIGHT IN.	DEPTH IN.	MIN. MEDIA FACE AREA SQ. FT.	ACCESS TYPE	WIDTH IN.	HEIGHT IN.	DEPTH IN.		
AF-2	VF-1	CARTRIGE	900	0.28	1.0	90-92	25-30	1	24	12	2	9.6	SIDE	24	15 1/4	2	30/30	HOUSING MODEL 4P GLIDE/PACK
AF-27	HVAC-27	PRE-FILTER	30,000	0.28	1.0	90-92	25-30	12 8	20 24	20 20	22 22	49 58	SIDE	---	---	---	30/30	
	HVAC-27	BAG	30,000	0.35	1.3	98	60-65	12 8	20 24	20 20	22 22	49 58	SIDE	---	---	---	S-FLO	
AF-28	HVAC-27	PRE-FILTER	30,000	0.28	1.0	90-92	25-30	12 8	20 24	20 20	22 22	58	SIDE	---	---	---	30/30	
	HVAC-27	BAG	30,000	0.35	1.3	98	60-65	12 8	20 24	20 20	22 22	49 58	SIDE	---	---	---	S-FLO	

NOTE 1. MODEL NUMBERS ARE FARR UNLESS OTHERWISE NOTED.
2. PROVIDE 25% TO 30% EFFICENT 2 INCH THROW AWAY PREFILTERS.
3. AIR HANDLING UNIT TOTAL STATIC PRESSURE IS BASED ON THE FILTER DIRTY END LIFE. AIR PRESSURE UNLESS NOTED OTHERWISE.

STEAM TEMPERING COIL SCHEDULE

UNIT I.D.	SYSTEM SERVED	CAPACITY MBH	MIN NO. ROWS	AIR			MIN FACE AREA SQ. FT.	STEAM				MODEL NO.	REMARKS
				AIRFLOW CFM	E.D.B. ° F	MAX A.P.D. IN. W.G.		INLET PRESS. PSIG AT CONTROL VA.	COIL INLET PRESS. PSIG	CONTROL VA. P.D. PSIG (EA.)	FLOW LBS/HR		
HC-102A	BC-102	5.5	1	120	55	0.08	0.3	10	5	5	6	1D4-75605T-.3-H/V-B/W	
HC-106	HVAC-27	144.4	1	3,100	55	1.04	2.1	10	5	5	150	1D8-25-5614T-2.1-H/V-B/W	
HC-107	HVAC-27	236.9	1	5,270	55	0.6	4.7	10	5	5	246	1D18-25-5610T-4.7-H/V-B/W	
HC-108	HVAC-27	144.4	1	3,100	55	1.04	2.1	10	5	5	150	1D8-25-5614T-2.1-H/V-B/W	
HC-223	BC-102	9.0	1	200	55	0.09	0.5	10	5	5	9	1D5-9-5605T-0.5-H/V-B/W	
HC-233	HVAC-27	817	1	18,370	55	0.75	13.1	10	5	5	854	1D34-37-5611T-13.1-H/V-B/W	
HC-233D	VF-1	29.4	1	900	70	0.75	0.7	10	5	5	31	1D6-11-5608T-0.7-H/V-B/W	
HC-203	HVAC-28	40.9	1	930	55	0.59	0.8	10	5	5	42	1D6-13-5610T-0.8-H/V-B/W	
HC-208	HVAC-28	98.6	1	2170	55	0.58	2.0	10	5	5	103	1D9-21-5610T-2.0-H/V-B/W	
HC-215	HVAC-28	40.9	1	930	55	0.59	0.8	10	5	5	42	1D6-13-5610T-0.8-H/V-B/W	

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PBA Project No. 203325

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Mechanical Schedules

9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW
DATE:	ISSUED FOR:
DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

CP03111

TMP PROJECT NO. 03118

SHEET NO.

M3.1

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PACKAGED AIR COOLED LIQUID CHILLER SCHEDULE

UNIT NO.	CAPACITY TONS	CHILLED WATER					COMPRESSOR MOTOR						MAX. FULL LOAD KW/TON	PART LOAD PERFORMANCE		CONDENSER		CONDENSER FAN MOTOR					MODEL NO.	REMARKS
		FLOW (GPM)	E.W.T. (° F)	L.W.T. (° F)	MAX W.P.D. (FT. HEAD)	FOULING FACTOR	NO. OF COMP.	KW TOTAL	RLA (EACH)	LRA (EACH)	VOLTS	PHASE		MAX. EER	MAX. IPLV	AMBIENT AIR TEMP (° F)	MIN. AMBIENT TEMP (° F)	QUAN.	NO. OF CONTROL STAGES	HP (EACH)	KW TOTAL	FLA (EACH)		
CH-1	154.3	337	56	44	13.9	.0001	2	215.2	140 128	280 280	460	3	1.49	8.1	0	105	0	8	8	---	14.4	4	YCAS0170EC46	

NOTE 1. MODEL NUMBERS ARE YORK UNLESS OTHERWISE NOTED.
2. CHILLED WATER DATA IS BASED ON 30% ETHYLENE GLYCOL SOLUTION.
3. EER (ENERGY EFFICIENCY RATIO.) SHALL BE IN ACCORDANCE WITH ARI STANDARD 555/590-98.
4. IPLV (INTEGRATED PART LOAD VALUE.) SHALL BE IN ACCORDANCE WITH ARI STANDARD 550/590-98.
5. SCHEDULED CAPACITY INCLUDES CAPACITY FOR FUTURE LOADS IN THE FITNESS AREA.

PUMP SCHEDULE

UNIT I.D.	SYSTEM SERVED	LOCATION	TYPE	COUPLING TYPE	MODULATION TYPE	WATERFLOW GPM	PUMP HEAD FT.	OVERLOAD GPM	MIN. EFF. %	MOTOR			ELECTRICAL		MODEL NO.	REMARKS
										BHP	HP	RPM	VOLTS	PHASE		
CP-3	CHILLED WATER	MECH RM 304	END SUCTION	FLEXIBLE	NONE	306	95	NON-OVERLOADING	71.4	10.2	15	1750	460	3	3G	
CP-4	CHILLED WATER	MECH RM 304	END SUCTION	FLEXIBLE	NONE	306	95	NON-OVERLOADING	71.4	10.2	15	1750	460	3	3G	STANBY

NOTE 1. MODEL NUMBERS ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.
2. SELECTION IS BASED ON 30% ETHYLENE GLYCOL SOLUTION.

EXPANSION TANK SCHEDULE

UNIT I.D.	SYSTEM SERVED	ESTIMATED TOTAL SYSTEM VOLUME GAL.	TYPE	OPERATING PRESS.		OPERATING TEMP.		TANK VOLUME GAL	ACCEPT. VOLUME GAL	DIMENSIONS		MODEL NO.	REMARKS
				MIN. PSIG	MAX. PSIG	MIN ° F	MAX ° F			DIA. IN.	HEIGHT IN.		
ET-1	CHILLED WATER	640	DIAPHRAGM	12	75.4	44	100	21.7	11.3	16 1/4	29 1/2	D-40V	

NOTE 1. MODEL NUMBERS ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.

PACKAGED AIR CONDITIONING UNIT SCHEDULE

INDOOR UNIT																OUTDOOR UNIT							
UNIT I.D.	AREA SERVED	TOTAL CAPACITY BTU/HR	AIR				FAN		ELECTRICAL		FILTER		ENCLOSURE DIMENSIONS			MODEL NO.	UNIT I.D.	ELECTRICAL		ENCLOSURE DIMENSIONS			MODEL NO.	REMARKS
			AIRFLOW CFM	E.S.P. IN. W.G.	E.D.B. ° F	E.W.B. ° F	NO. FANS	HP EA	VOLTS	PHASE	EFF. %	AREA SQ. FT.	LENGTH IN.	WIDTH IN.	HEIGHT IN.			VOLTS	PHASE	LENGTH IN.	WIDTH IN.	HEIGHT IN.		
AC-1	ELEV. EQUIP	12,900	330	---	75	62.5	1	45 W	208	1	20	---	39-3/16	2-2/5	11-7/32	18KS52	CU-1	1	208	34-21/32	12-19/32	21-19/32	CL1852	
AC-2	TELECOM	33,000	750	---	75	62.5	1	100 W	208	1	20	---	59-1/16	9-7/16	14-9/14	36KS32	CU-2	1	208	37	13-3/8	48-5/8	CL3652	

NOTE 1. MODEL NUMBERS ARE SANYO UNLESS OTHERWISE NOTED.
2. PROVIDE LOW AMBIENT CONTROL, CONDENSATE DRAIN PUMP AND WIRED REMOTE DIAGNOSTIC CONTROLLER.

STEAM UNIT HEATER SCHEDULE

UNIT I.D.	CAPACITY BTU/HR	AIRFLOW CFM	LEAVING AIR TEMP ° F	FAN		ELECTRICAL		STEAM				MODEL NO.	REMARKS
				HP	RPM	VOLTS	PHASE	INLET PRESS. PSIG AT CONTROL VA.	CONTROL VA. P.D. PSIG	INLET PRESS. PSIG AT UNIT	FLOW LBS/HR		
UH-1	37,800	550	123.3	16 W	1550	115	1	10	5	5	39.3	HS-24	

NOTE 1. MODEL NUMBERS ARE STERLING UNLESS OTHERWISE NOTED.

AIR TERMINAL UNIT SCHEDULE

UNIT I.D.	AIRFLOW RANGE		MAX. PRESS. DROP IN. W.G.	DUCT CONNECTIONS		DISCHARGE SOUND POWER/RADIATED SOUND POWER – dB						MODEL NO.	REMARKS
	MIN. CFM	MAX. CFM		INLET SIZE IN.	OUTLET SIZE IN.	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz		
TU-1	110	350	0.15	6ø	12x8	73/66	69/63	62/52	56/42	53/40	49/36	ESV-3000	
TU-2	200	650	0.15	8ø	12x10	72/68	70/59	66/53	63/47	57/46	53/46	ESV-3000	
TU-3	320	900	0.15	10ø	14x12-1/2	78/71	70/61	65/56	61/50	58/47	53/45	ESV-3000	
TU-4	470	1500	0.15	12ø	16x15	76/72	73/63	69/59	65/53	61/48	57/46	ESV-3000	
TU-5	900	2500	0.15	16ø	24x18	78/70	73/63	70/58	68/53	64/52	59/50	ESV-3000	

NOTE 1. MODEL NUMBERS ARE TITUS UNLESS OTHERWISE NOTED.
2. MINIMUM AND MAXIMUM AIRFLOW SHALL BE SET TO THE CFM INDICATED ON FLOOR PLANS.
3. MAXIMUM PRESSURE DROP SCHEDULED SHALL BE THE MAXIMUM ALLOWABLE STATIC PRESSURE ACROSS THE UNIT AT THE SCHEDULED MAXIMUM AIRFLOW, WITH THE UNIT DAMPER FULLY OPEN.
4. MAXIMUM SOUND POWER LEVEL BASED ON 2" PRESSURE DROP ACROSS UNIT WITH NO ALLOWANCE FOR EXTERNAL ATTENUATION.

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
1191 WEST SQUARE LAKE ROAD - BOX 289
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www.pbainc.com
PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Mechanical Schedules

DATE:	ISSUED FOR:
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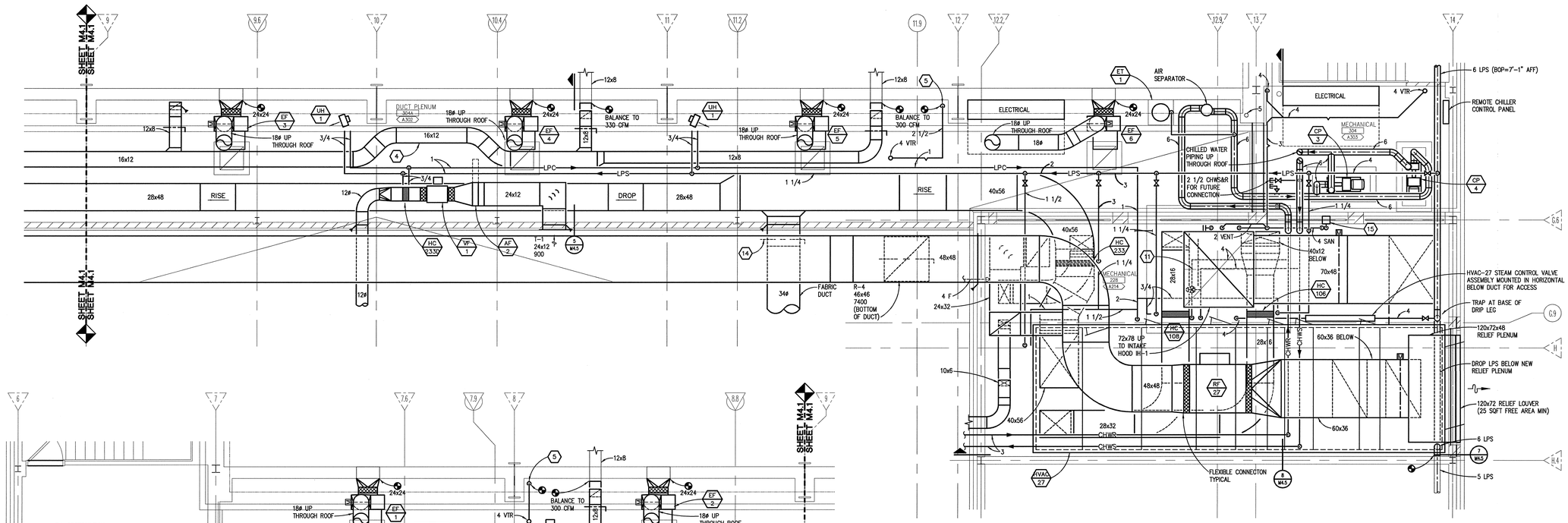
CP03111

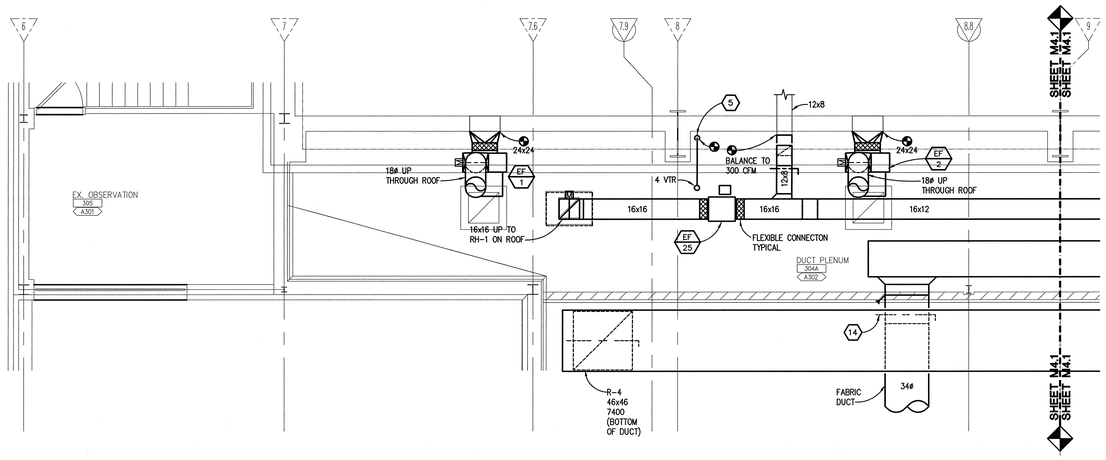
TMP PROJECT NO. 03118

SHEET NO.

M3.2

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TRUE NORTH

1 M1.3A, M2.3A **THIRD LEVEL MECHANICAL ENLARGED PLAN**

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

0 1 2 4

TRUE NORTH

2 M1.3A, M2.3A **THIRD LEVEL MECHANICAL ENLARGED PLAN**

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

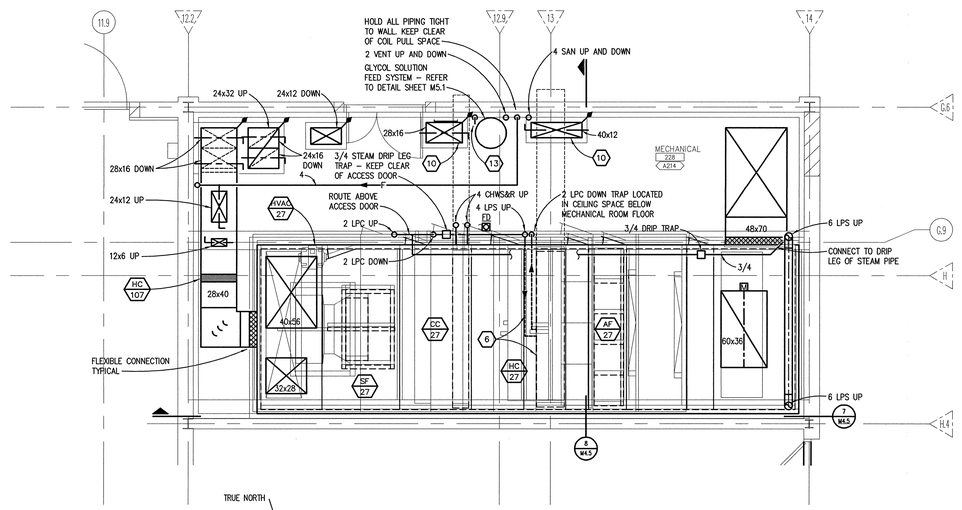
0 1 2 4

HVAC GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE SHEET METAL AND PIPING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITRED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
3. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK AND PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
5. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS, ETC. WITH ARCHITECTURAL TRADES.
6. CONTRACTOR SHALL MOUNT THERMOSTATS 48" A.F.F. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHEN INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.
7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
8. BRANCH DUCTWORK UPSTREAM OF SUPPLY TERMINAL UNITS SHALL BE BOX INLET SIZE NOTED IN THE SCHEDULE UNLESS OTHERWISE NOTED.
9. BRANCH DUCTWORK DOWNSTREAM OF RETURN TERMINAL UNITS SHALL TRANSITION TO BOX INLET SIZE NOTED IN SCHEDULE UNLESS OTHERWISE NOTED.
10. CONTRACTOR SHALL NOT LOCATE PIPING BELOW DUCT MOUNTED AIR TERMINAL UNITS, TERMINAL UNIT HEATING COILS, OR OTHER EQUIPMENT.
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DETAILS.
12. COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO TERMINAL UNITS, BALANCING DAMPERS, TERMINAL UNIT HEATING COIL PIPING, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

CONSTRUCTION NOTES:

1. NOT USED.
2. PIPE ROUTING IS VERY TIGHT THROUGH THIS AREA. COORDINATE THE LOCATION OF THE RC WITH EXISTING EQUIPMENT AND STRUCTURE. ROUTE AT APPROXIMATLY 9'-0" ABOVE FINISHED FLOOR.
3. CONNECT TO 10x12 EXHAUST DUCT FROM STORAGE/CUSTODIAL 101 TO 8x6 EXHAUST DUCT FROM STORAGE 102B UPSTREAM OF FAN INLET. CONNECT EXHAUST DUCTWORK FROM FAN OUTLET TO EXISTING 10x12 DUCT AND RELIEF HOOD.
4. OFFSET DUCTWORK AS INDICATED TO PROVIDE ACCESS FOR MAINTENANCE AND FILTER REPLACEMENT FOR VF-1 AND F-1.
5. CONNECT TO EXISTING VENT IN CEILING BELOW AND EXTEND THROUGH ROOF AS INDICATED.
6. INSULATE STEAM AND CONDENSATE PIPE AND IFB COIL INLET AND OUTLET HEADERS INSIDE OF HVAC-27 - REFER TO SPECIFICATIONS.
7. ROUTE VENT PIPING DOWN AND OFFSET UNDER GRATE FLOORING TO CONNECT TO EXISTING VENT.
8. ROUTE CONDENSATE DRAIN PIPING BELOW BAR GRATE FLOOR.
9. NOT USED
10. PROVIDE FLANGED DUCTWORK AT THIS LOCATION TO FACILITATE REMOVAL DURING HVAC-27 COIL PULL.
11. PROVIDE SHEETMETAL STREAMLINER AROUND EXISTING BAR JOIST IN INTAKE PLENUM. PROVIDE INSULATION AROUND JOIST INSIDE OF STREAMLINER TO PREVENT CONDENSATION.
12. PROVIDE DUCT TRANSITIONS AND FLEXIBLE CONNECTIONS AT THE EXHAUST FAN INLET AND OUTLET. CONNECT FAN OUTLET TO EXISTING 10x10 EXHAUST DUCT.
13. ¾ CW, REFER TO GLYCOL SOLUTION FEED SYSTEM DIAGRAM ON SHEET M5.1
14. EXTEND SPIRAL DUCT THROUGH WALL WITH FIRE DAMPER, BALANCING DAMPER AND MINIMUM DUCT LENGTH FOR CONNECTION TO FABRIC DUCT SYSTEM.
15. PROVIDE J.R. SMITH SCUPPER DRAIN MODEL #1580 OR EQUIVALENT BY WADE, ZURN OR JOSAM.



TRUE NORTH

3 M1.2A, M2.2A **SECOND LEVEL MECHANICAL ENLARGED PLAN**

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

0 1 2 4

SHEET:	OF:
I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
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www.pbainc.com
PBA Project No. 223505

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Enlarged Mechanical Room Plans

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
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DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

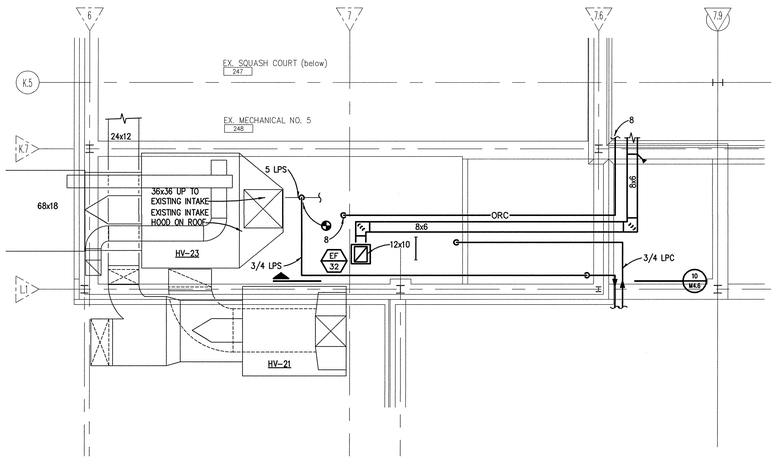
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M4.1

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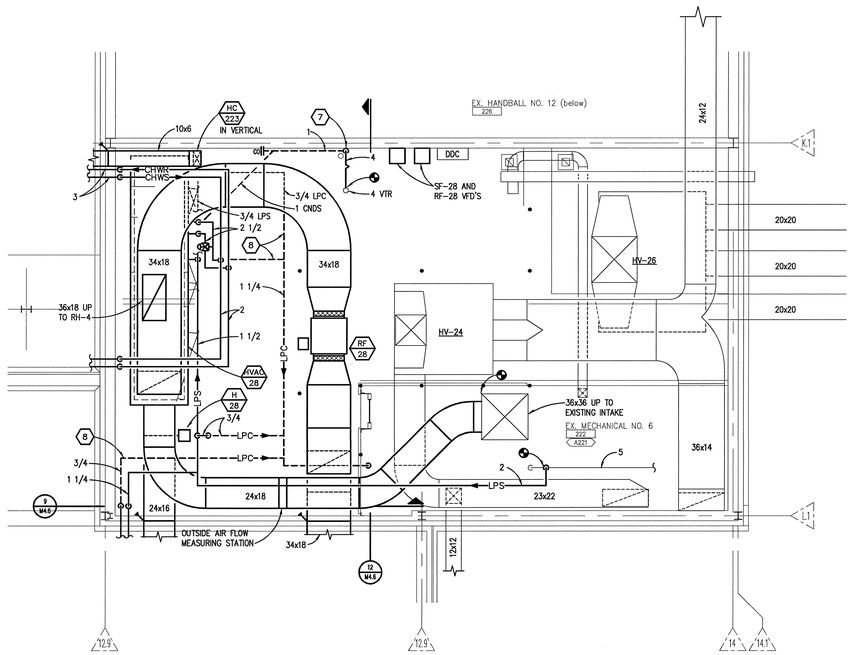


TRUE NORTH

2 M1.3A, M2.3A **THIRD LEVEL MECHANICAL ENLARGED PLAN**

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

0 1 2 4



TRUE NORTH

5 M1.3A, M2.3A **THIRD LEVEL MECHANICAL ENLARGED PLAN**

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

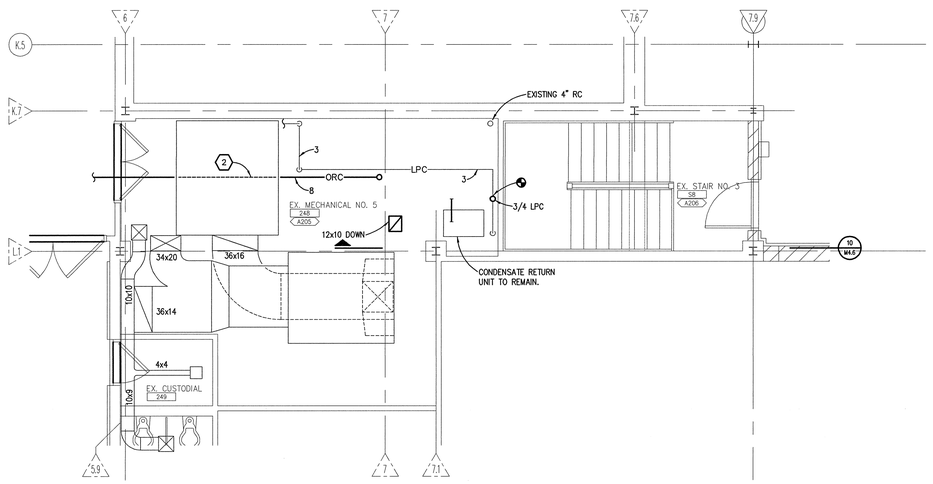
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CONSTRUCTION NOTES:

1. NOT USED. (2)
2. PIPE ROUTING IS VERY TIGHT THROUGH THIS AREA. COORDINATE THE LOCATION OF THE RC WITH EXISTING EQUIPMENT AND STRUCTURE. ROUTE AT APPROXIMATELY 9'-0" ABOVE FINISHED FLOOR. (2)
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7. ROUTE VENT PIPING DOWN AND OFFSET UNDER GRATE FLOORING TO CONNECT TO EXISTING VENT.
8. ROUTE CONDENSATE DRAIN PIPING BELOW BAR GRATE FLOOR. (2)
9. NOT USED
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12. PROVIDE DUCT TRANSITIONS AND FLEXIBLE CONNECTIONS AT THE EXHAUST FAN INLET AND OUTLET. CONNECT FAN OUTLET TO EXISTING 10x10 EXHAUST DUCT. (2)
13. ¾ CW, REFER TO GLYCOL SOLUTION FEED SYSTEM DIAGRAM ON SHEET M5.1
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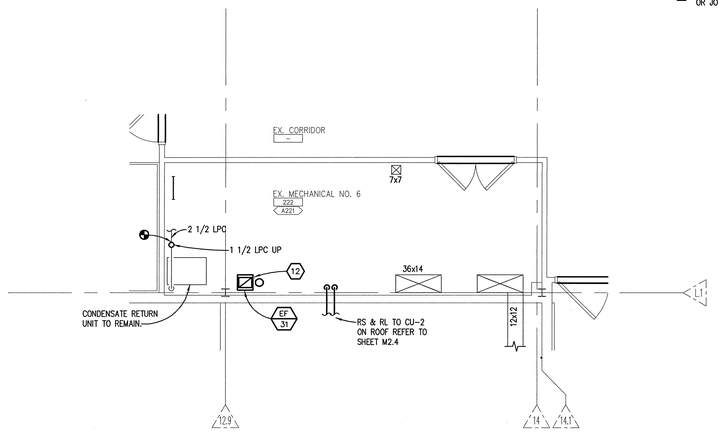


TRUE NORTH

6 M1.2A, M2.2A **SECOND LEVEL MECHANICAL ENLARGED PLAN**

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

0 1 2 4



TRUE NORTH

7 M1.2A, M2.2A **SECOND LEVEL MECHANICAL ENLARGED PLAN**

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

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I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
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PBA Project No. 203205

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I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Enlarged Mechanical Room Plans

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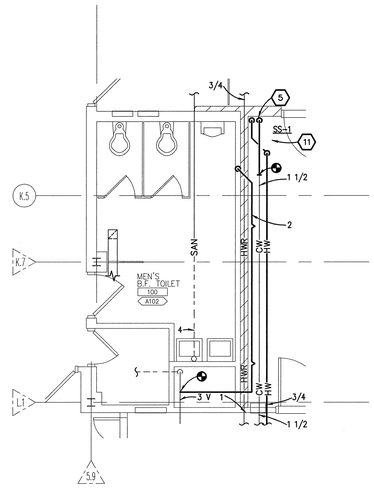
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M4.2

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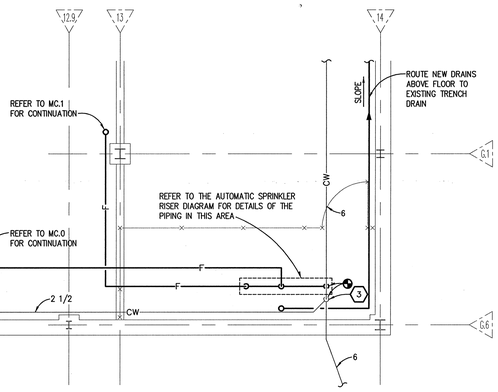
TRUE NORTH

1 / M1.1A

FIRST LEVEL PLUMBING ENLARGED PLAN

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

0 1 2 4



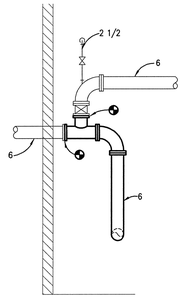
TRUE NORTH

3 / MC.0

BASEMENT FIRE PROTECTION ENLARGED PLAN

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

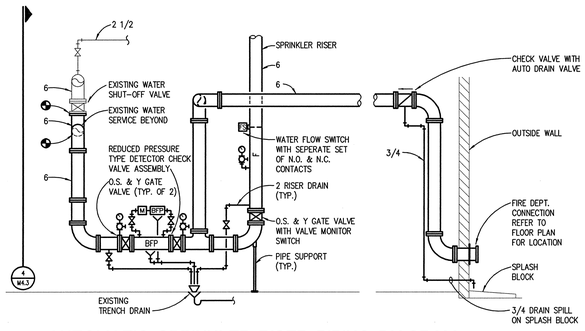
0 1 2 4



4 / M4.3

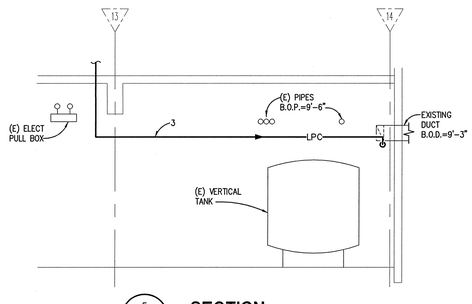
SECTION

NO SCALE



AUTOMATIC SPRINKLER RISER PIPING DIAGRAM

NO SCALE



5 / M2.0B

SECTION

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

0 1 2 4

PLUMBING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC & INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS OF PLUMBING FIXTURES.
3. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WITH THE WORK OF ALL OTHER TRADES.
4. PIPING SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. PIPING SHALL NOT BE LOCATED BELOW DUCT MOUNTED AIR TERMINAL UNITS, TERMINAL UNIT HEATING COILS, OR OTHER EQUIPMENT.
6. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
7. CONTRACTOR SHALL COORDINATE THE SHUT DOWN OF ANY EXISTING SERVICES AND/OR EQUIPMENT WITH THE OWNER'S REPRESENTATIVE.
8. HOT AND COLD WATER PIPING RUN-OUTS TO LAVS AND SINKS SHALL BE 3/4" UNLESS NOTED OTHERWISE. REFER TO SPECIFICATIONS FOR FIXTURE CONNECTION SIZES.
9. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 25'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
10. PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
11. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

CONSTRUCTION NOTES:

1. INSTALL RC PIPING IN ARCHITECTURAL COLUMN LOCATE CLEAN OUT AT TOP OF STACK ABOVE ENCLOSURE FOR ACCESS. REFER TO ARCHITECTURAL DETAILS AND DETAIL ON M5.2.
2. OFFSET ORC PIPING AND ROUTE TIGHT TO GYM WALL SUPPORT PIPING FROM WALL.
3. REMOVE ELBOW IN THE EXISTING WATER MAIN PIPING. INSTALL NEW TEE AND CONNECT TO THE EXISTING PIPING. INSTALL NEW AUTOMATIC SPRINKLER PIPING AS INDICATED HERE AND ON THE AUTOMATIC SPRINKLER RISER PIPING DIAGRAM.
4. NOT USED
5. ROUTE 3/4 CW & 3/4 HW DN IN WALL TO SS-1.
6. INSTALL NEW FLOOR DRAIN AND CONNECT TO EXISTING SANITARY PIPING.
7. NEW UNDERGROUND STORM PIPING CONNECT TO EXISTING. COORDINATE UNDERGROUND STORM PIPING WITH NEW COLUMN FOOTINGS.
8. ROOM AIR CONDITIONING UNIT- ROUTE ¾ CONDENSATE DRAIN BELOW CEILING TO EXISTING VENT DRAIN-REFER TO DETAIL ON SHEET M5.1
9. NOT USED
10. ROUTE NEW 3 SAN FROM SS-1 IN BASEMENT CEILING SPACE AND CONNECT TO EXISTING 6 SAN.
11. INCLUDE ALL PIPING AND WORK ASSOCIATED WITH SS-1 IN BASE BID.
12. NOT USED
13. ¾ CW DOWN TO EWC-1 ON THIS FLOOR AND ¾ CW UP TO EWC-1 ON THE SECOND FLOOR.
14. NOT USED
15. NOT USED
16. PROVIDE MINIMUM 18" CLEARANCE (FOR 6" AND SMALLER, FOR 8" AND LARGER PROVIDE 36" CLEARANCE) AT CLEAN OUT. COORDINATE WITH ALL OTHER TRADES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

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PBA Project No. 223025

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Enlarged Plumbing and Fire Protection Plans

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

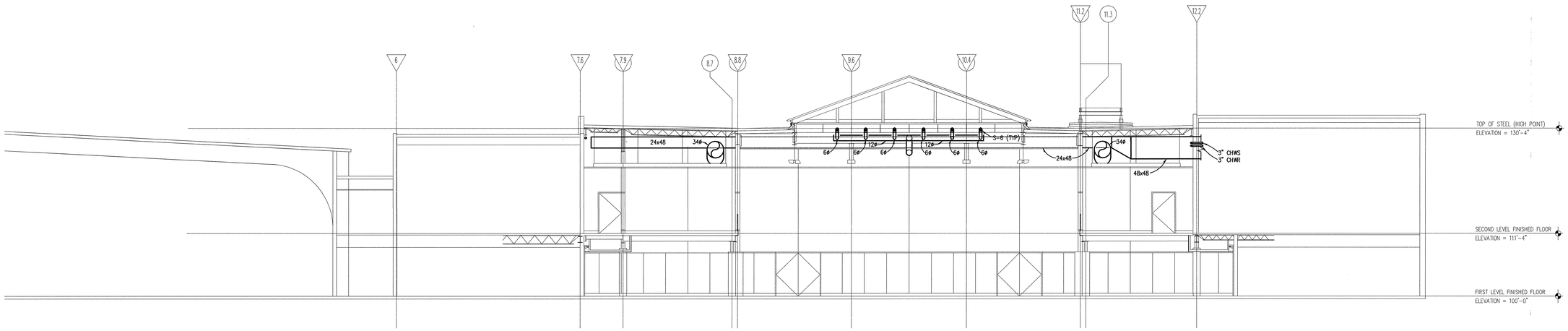
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M4.3

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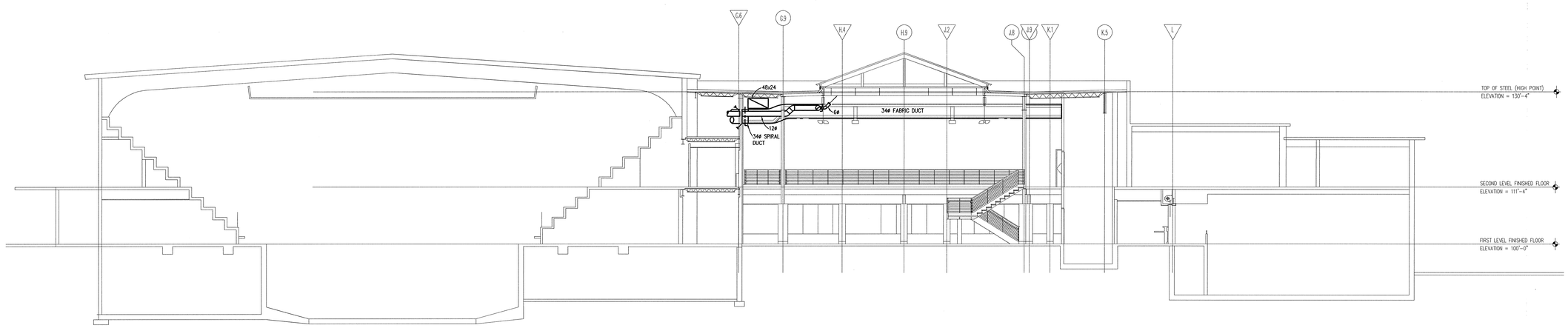


1
MC.0, MC.1, MC.2, MC.3
M1.1A, M1.2A, M1.3A
M2.1A, M2.2A, M2.3A

SECTION - LOOKING SOUTH

SCALE: 1/8" = 1' - 0"

0 1 4 8



2
MC.0, MC.1, MC.2, MC.3
M1.1A, M1.2A, M1.3A
M2.1A, M2.2A, M2.3A

SECTION - LOOKING WEST

SCALE: 1/8" = 1' - 0"

0 1 4 8

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY: APP'D BY: DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED DWG NO: B-151-76 CARD NO: CP 03111

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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Mechanical Sections

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

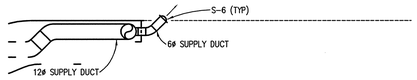
CP03111

TMP PROJECT NO. 03118

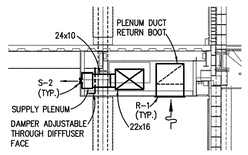
SHEET NO.

M4.4

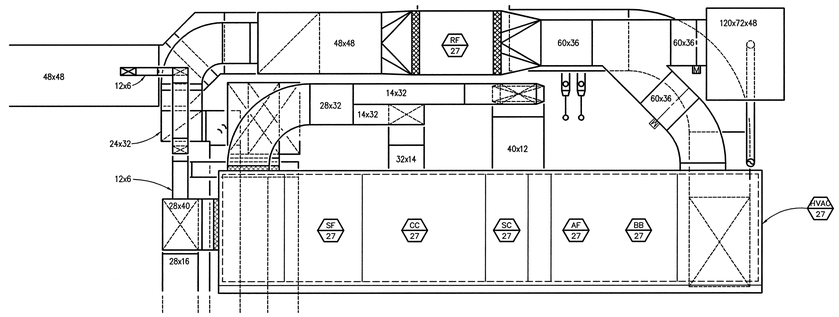
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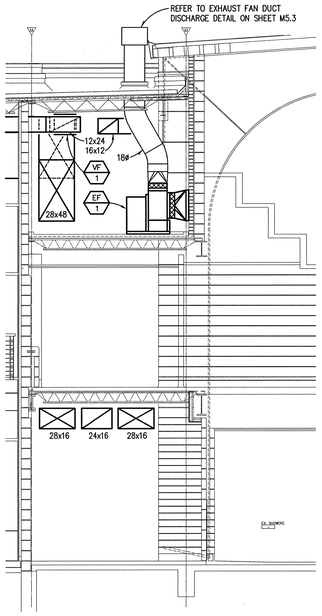
3 / M2..3A **SECTION**
SCALE: 1/4" = 1'-0"



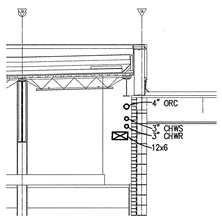
4 / M2.1A **SECTION**
SCALE: 1/4" = 1'-0"



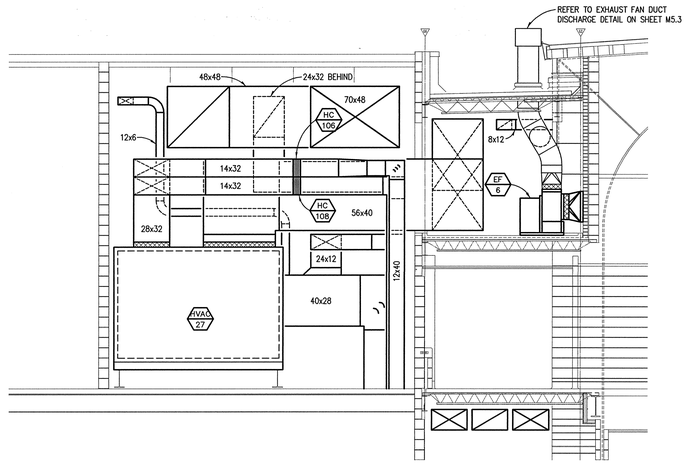
7 / M4.1 **SECTION**
SCALE: 1/4" = 1'-0"



5 / M2.1A, M2.2A, M2.3A, M4.1 **SECTION**
SCALE: 1/4" = 1'-0"



6 / M1.3A & M2.3A **SECTION**
SCALE: 1/4" = 1'-0"



8 / M4.1 **SECTION**
SCALE: 1/4" = 1'-0"

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	DWG NO: B-151-76
	CARD NO: CP 03111

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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Mechanical Sections

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

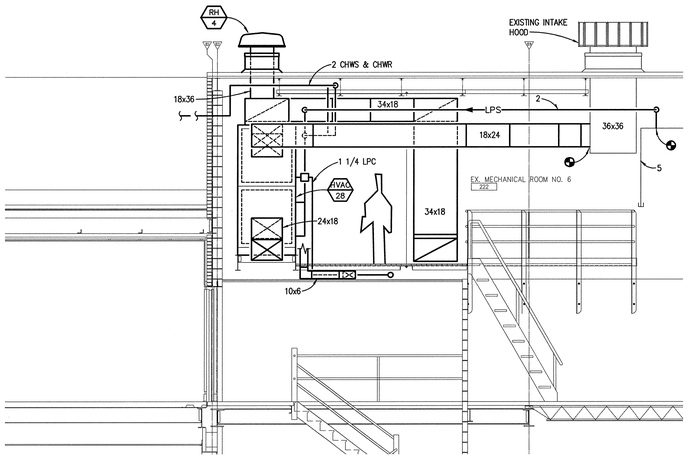
CP03111

TMP PROJECT NO. 03118

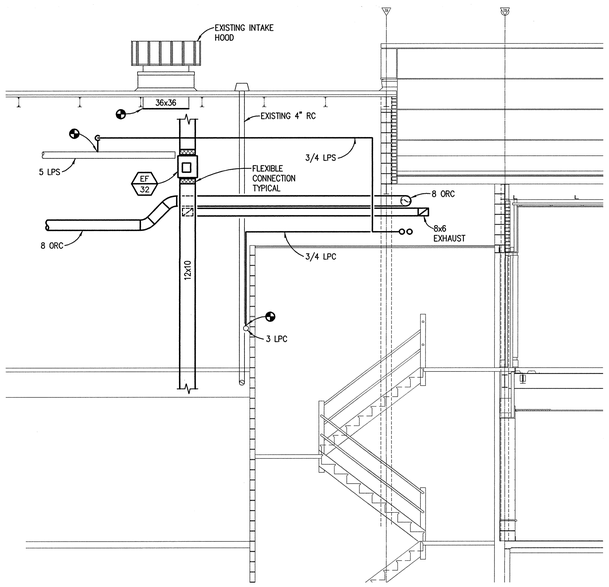
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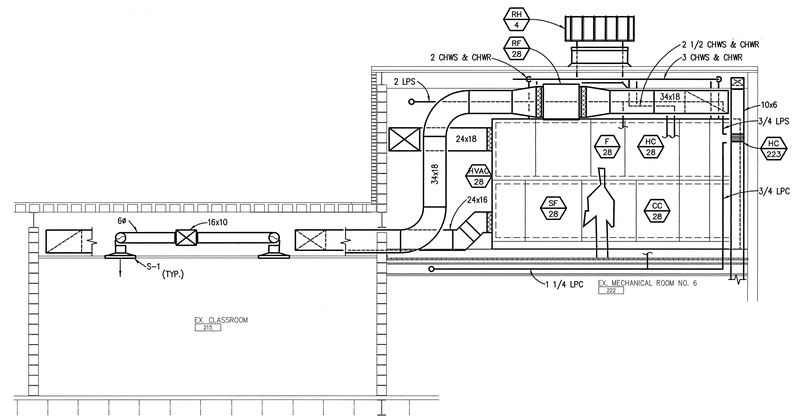


9 M2.3A & M4.2 **SECTION**
SCALE: 1/4" = 1' - 0"
0 1 2 4



10 M2.3A & M4.2 **SECTION**
SCALE: 1/4" = 1' - 0"
0 1 2 4

11 M2.1A, M2.2A, M2.3A **SECTION**
SCALE: 1/4" = 1' - 0"
0 1 2 4



12 M2.3A & M4.2 **SECTION**
SCALE: 1/4" = 1' - 0"
0 1 2 4

SHEET:	OF:
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	DWG NO: B-151-76
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PBA Project No. 223025

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Mechanical Sections

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

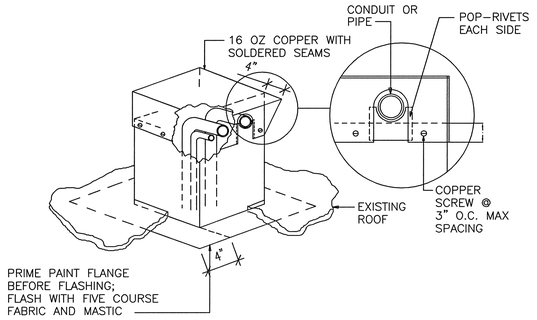
CP03111

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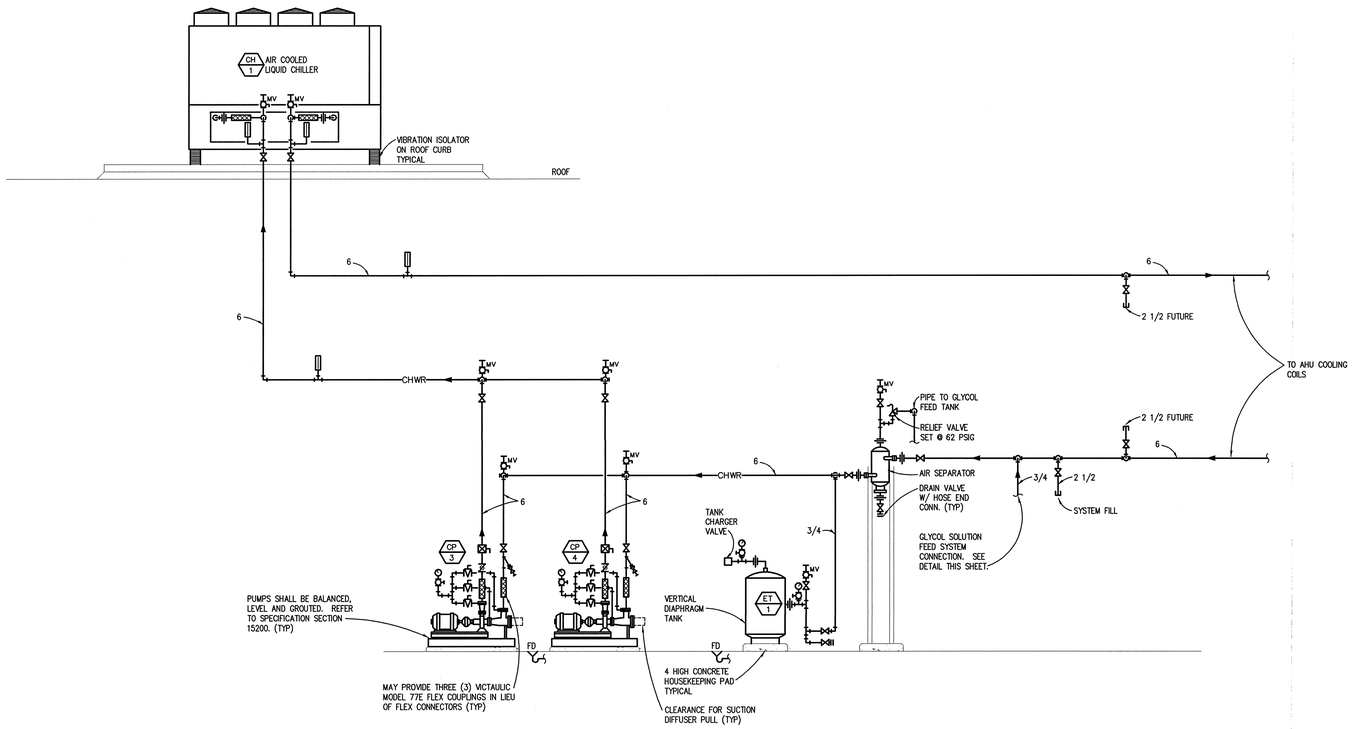
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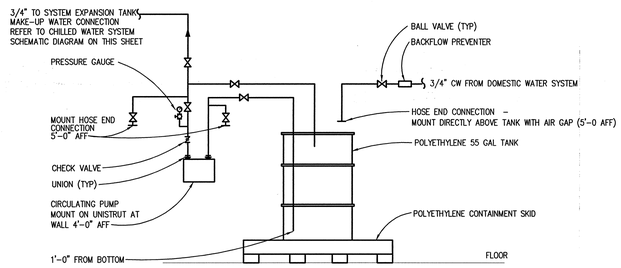
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ROOF PIPE FLASHING DETAIL
NO SCALE

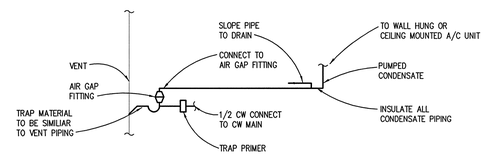


CHILLED WATER SYSTEM (CH-1) SCHEMATIC DIAGRAM
NO SCALE



GLYCOL SOLUTION FEED SYSTEM
NO SCALE

GLYCOL FILL PUMP SHALL BE GRAINGER ITEM NO 3P569, 115V, 1/2 HP WITH MANUAL SWITCH MOUNTED ON WALL NEXT TO PUMP.



CONDENSATE DRAIN DIAGRAM
NO SCALE

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
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	DWG NO: B–151–76
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TMP ARCHITECTURE

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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Mechanical Details

9–8–06	AS–BUILT
6–17–04	BULLETIN NO. 1
3–26–04	ADDENDUM NO. 2
2–18–04	BIDS
1–28–04	FINAL REVIEW
DATE:	ISSUED FOR:
DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

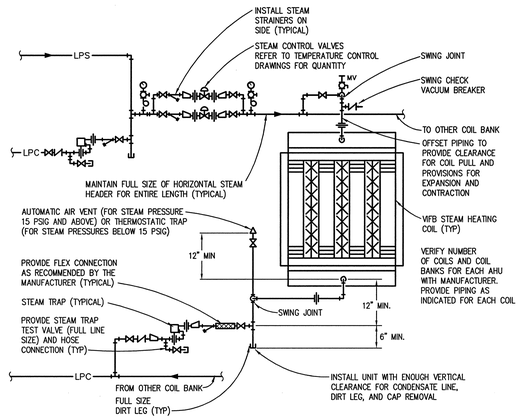
CP03111

TMP PROJECT NO. 03118

SHEET NO.

M5.1

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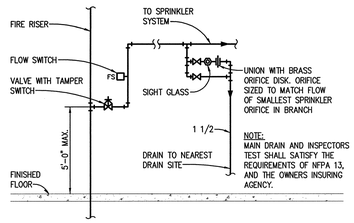


STEAM HEATING COIL PIPING DIAGRAM

NO SCALE **(TYPICAL FOR AHU-27 & HVAC-28)**

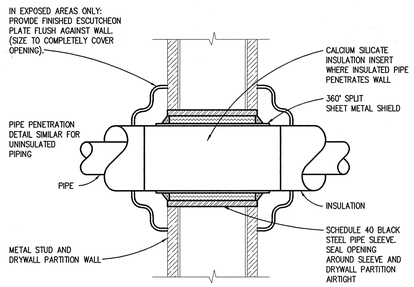
NOTES:

1. STEAM MAINS, RETURN MAINS AND TRAPS SHOULD BE ANCHORED AND SUPPORTED INDEPENDENTLY OF THE VFB COIL(S). TRAPS AND CONDENSATE PIPING SHALL BE SUPPORTED ON SPRING LOADED HANGERS OR PADS TO PREVENT PIPING FORCES ON RETURN HEADERS.
2. STEAM TRAPS SHALL BE SIZED FOR THREE TIMES THE CALCULATED LOADING AT THE COIL DESIGN CONDITIONS.
3. RETURN LINE SHALL BE FULL SIZE OF COIL HEADER CONNECTION TO TRAP (INCLUDING STRAINER).
4. STEAM AND CONDENSATE LINES WITHIN AIR HANDLING UNIT, SUPPLY AND RETURN HEADERS WITHIN AIR HANDLING UNIT SHALL BE INSULATED. CONDENSATE LINE SHALL HAVE ALUMINUM JACKET. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
5. HORIZONTAL FACE AND BYPASS COIL PIPING SIMILAR.



DRAIN/INSPECTORS TEST DETAIL

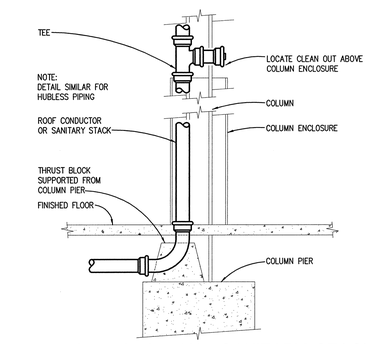
NO SCALE



DETAIL INDICATES THE INSTALLATION REQUIREMENTS FOR A FIRE RATED ASSEMBLY. FOR A NON-FIRE RATED ASSEMBLY PACK SLEEVED OPENING WITH INSULATION MATERIAL AND CAULK WITH NON-HARDENING SEALANT.

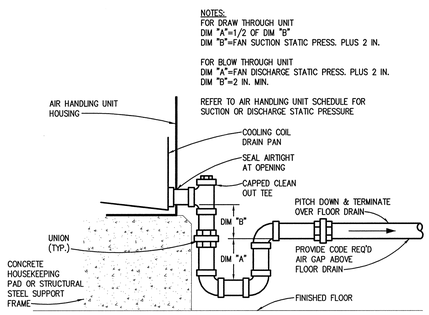
FIRE RATED AND NON-FIRE RATED METAL STUD AND DRYWALL PARTITION WALL PIPE PENETRATION DETAIL

NO SCALE



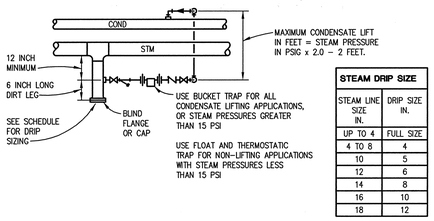
ROOF CONDUCTOR AND SANITARY STACK BASE CONNECTION DETAIL

NO SCALE



COOLING COIL DRAIN PAN TRAP DETAIL

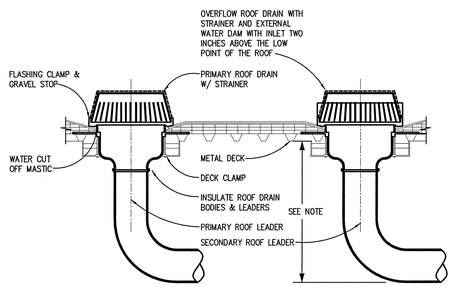
NO SCALE



STEAM DRIP SIZE	
STEAM LINE SIZE IN.	DRIP SIZE IN.
UP TO 4	FULL SIZE
4 TO 8	4
10	5
12	6
14	8
16	10
18	12

STEAM DRIP PIPING DIAGRAM

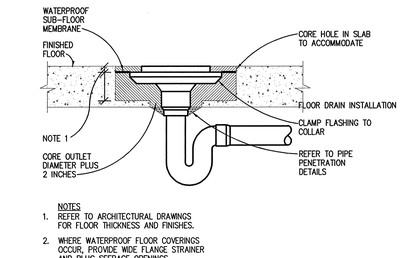
NO SCALE



NOTE:
DIMENSION FOR 6" ROOF DRAIN FROM BOTTOM OF DECK TO BOTTOM OF PIPE SHALL BE MAXIMUM OF 20". DIMENSION FOR 8" ROOF DRAIN SHALL BE A MAXIMUM OF 22". DIMENSION FOR 10" ROOF DRAIN SHALL BE A MAXIMUM OF 26".

DOUBLE ROOF SUMP DETAIL

NO SCALE

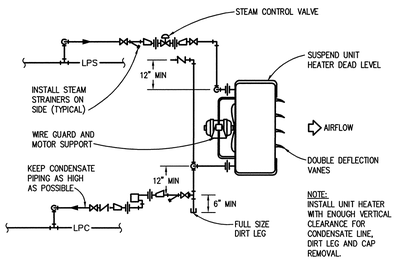


NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR FLOOR THICKNESS AND FINISHES.
2. WHERE WATERPROOF FLOOR COVERINGS OCCUR, PROVIDE WIDE FLANGE STRAINER AND PLUG SEEPAGE OPENINGS.
3. PROVIDE EXTENSIONS WHERE REQUIRED TO ACCOMMODATE FLOOR THICKNESS.

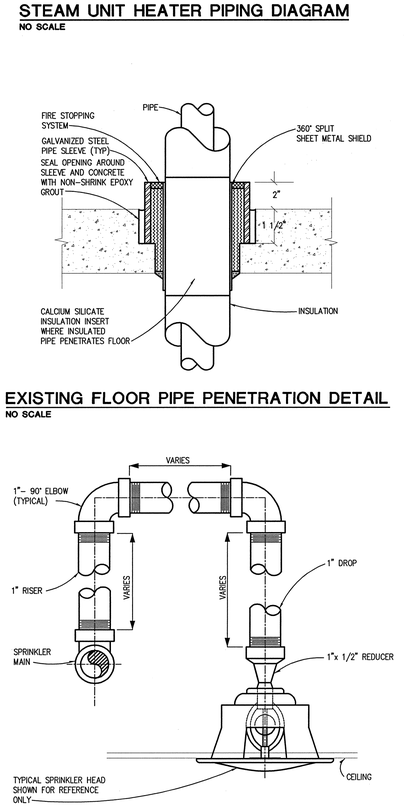
FLOOR DRAIN PIPING DETAIL

NO SCALE



STEAM UNIT HEATER PIPING DIAGRAM

NO SCALE

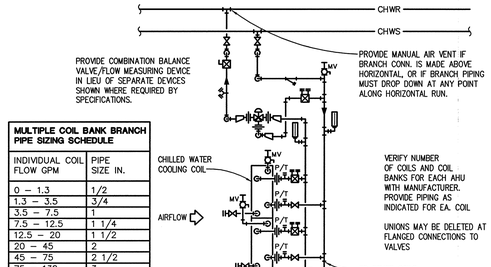


EXISTING FLOOR PIPE PENETRATION DETAIL

NO SCALE

TYPICAL SPRINKLER PIPING DETAIL

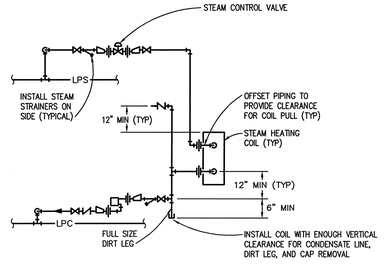
NO SCALE



MULTIPLE COIL BANK BRANCH PIPE SIZING SCHEDULE	
INDIVIDUAL COIL FLOW GPM	PIPE SIZE IN.
0 – 1.3	1/2
1.3 – 3.5	3/4
3.5 – 7.5	1
7.5 – 12.5	1 1/4
12.5 – 20	1 1/2
20 – 45	2
45 – 75	2 1/2
75 – 130	3
130 – 300	4

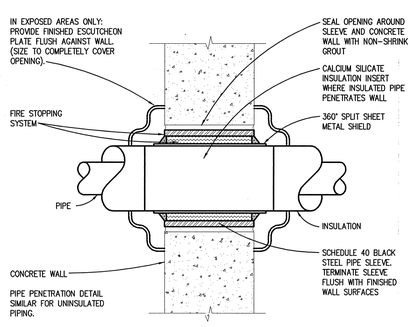
AHU CHILLED WATER COOLING COIL WITH THREE-WAY CONTROL VALVE PIPING DIAGRAM

NO SCALE **(HVAC-27 AND HVAC-28)**



STEAM TEMPERING COIL PIPING DIAGRAM

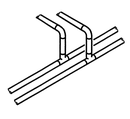
NO SCALE



DETAIL INDICATES THE INSTALLATION REQUIREMENTS FOR A FIRE RATED ASSEMBLY. FOR A NON-FIRE RATED ASSEMBLY PACK SLEEVED OPENING WITH INSULATION MATERIAL AND CAULK WITH NON-HARDENING SEALANT.

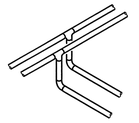
FIRE RATED AND NON-FIRE RATED POURED CONCRETE OR BLOCK WALL PIPE PENETRATION DETAIL

NO SCALE



BRANCH CONNECTION OFF TOP

APPLIES TO THE FOLLOWING SYSTEMS:
DOMESTIC WATER
STEAM & CONDENSATE



BRANCH CONNECTION OFF BOTTOM

APPLIES TO THE FOLLOWING SYSTEMS:
CHILLED WATER

TYPICAL BRANCH TAKE-OFF CONNECTION PIPING DETAIL

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

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www.pbainet.com
PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Mechanical Details

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.

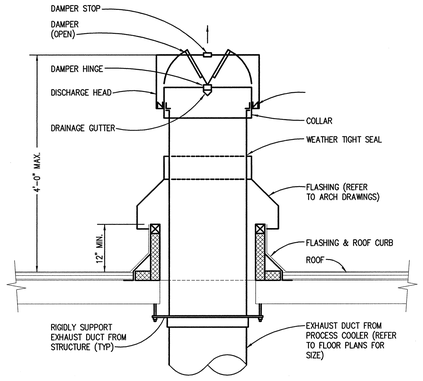
CP03111

TMP PROJECT NO. 03118

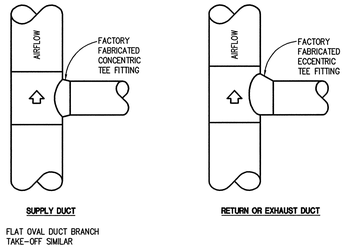
SHEET NO.

M5.2

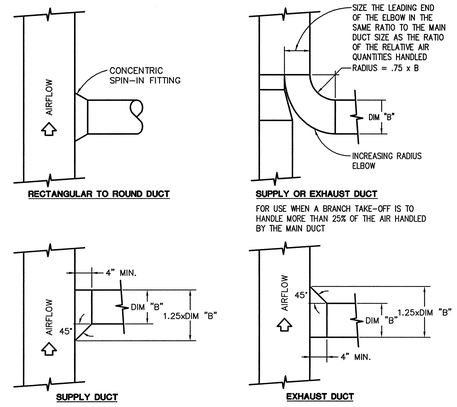
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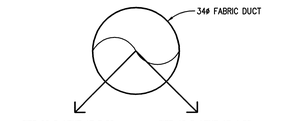
EXHAUST FAN DISCHARGE DUCT DETAIL
NO SCALE



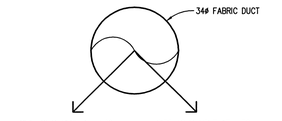
ROUND DUCT BRANCH TAKE-OFF DETAILS
NO SCALE



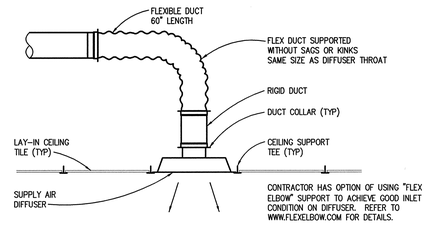
RECTANGULAR DUCT BRANCH TAKE-OFF DETAILS
NO SCALE



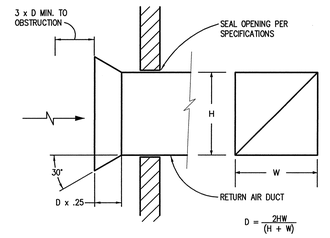
1 M2.3A **SECTION**
SCALE: 1/8" = 1'-0"



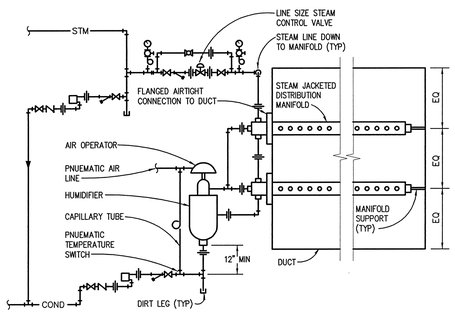
2 M2.3A **SECTION**
SCALE: 1/8" = 1'-0"



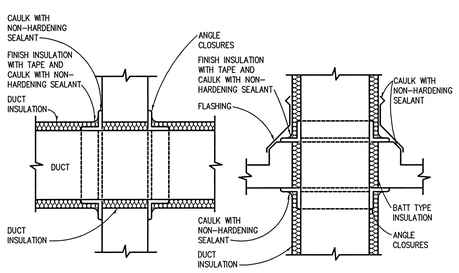
SUPPLY AIR DIFFUSER INSTALLATION DETAIL
NO SCALE



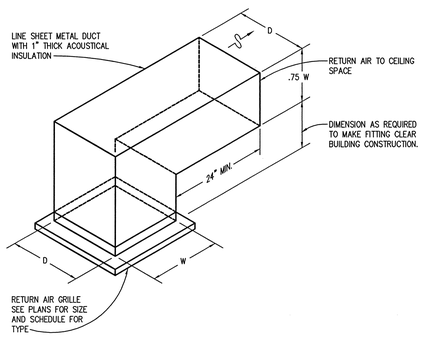
RETURN AIR BELLMOUTH DETAIL
NO SCALE



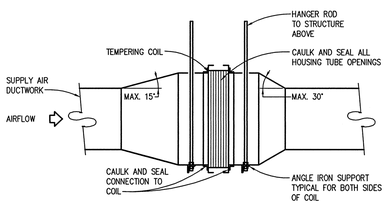
MULTIPLE MANIFOLD STEAM HUMIDIFIER PIPING DIAGRAM
NO SCALE



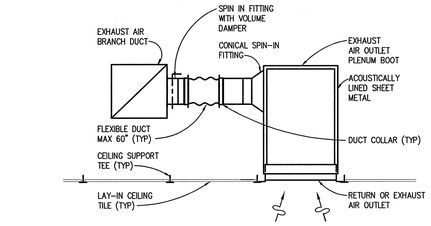
VERTICAL OR HORIZONTAL (NON FIRE RATED ASSEMBLY) DUCT PENETRATION DETAIL
NO SCALE



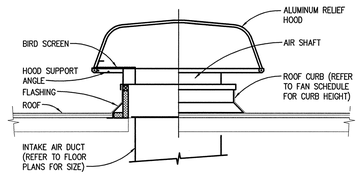
PLENUM RETURN AIR GRILLE DETAIL
NO SCALE



DUCT MOUNTED TEMPERING COIL INSTALLATION DETAIL
NO SCALE



EXHAUST AIR INLET DETAIL
NO SCALE



INTAKE HOOD INSTALLATION DETAIL
NO SCALE

TMP ARCHITECTURE

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PBA Project No. 203205

PROJECT TITLE
I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE
Mechanical Details

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
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1-28-04	FINAL REVIEW

DRAWN	DBC
CHECKED	NPB
APPROVED	DJE

PROJECT NO.
CP03111
TMP PROJECT NO. 03118

SHEET NO.
M5.3

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

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TEMPERATURE CONTROL - SYMBOLS LIST

SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
AFC	AIR FLOW CONTROLLER
AQ	AQUASTAT, STRAP ON BULB
CO2	CARBON DIOXIDE SENSOR – WALL MOUNTED
CO2	CARBON DIOXIDE SENSOR – DUCT MOUNTED
CO	CARBON MONOXIDE SENSOR – WALL MOUNTED
CO	CARBON MONOXIDE SENSOR – DUCT MOUNTED
CS	CURRENT SWITCH
CT	CURRENT TRANSMITTER
	DAMPER – INLET VANES
	DAMPER – OPPOSED BLADE
	DAMPER – PARALLEL BLADE
M	DAMPER MOTOR
M	DAMPER MOTOR W/ POSITIVE POSITIONER
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DPS	DIFFERENTIAL PRESSURE SWITCH
EP	ELECTRIC–PNEUMATIC RELAY
EPT	ELECTRIC TO PNEUMETIC TRANSDUCER
CM	FIRE ALARM SYSTEM, ADDRESSABLE CONTROL MODULE
IM	FIRE ALARM SYSTEM, ADDRESSABLE INTERFACE MODULE
FMS	FLOW MEASURING STATION
FM	FLOW METER
FS	FLOW SWITCH
FZ	FREEZESTAT
F	GAUGE – FLOW
P	GAUGE – PRESSURE
T	GAUGE – TEMPERATURE
	GUARD FOR STAT OR SENSOR
	HUMIDIFIER
H	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)
H	HUMIDITY SENSOR, DUCT MOUNTED
LVL	LEVEL SWITCH OR TRANSMITTER
LS	LIMIT SWITCH
	LINE – ELECTRIC
	LINE – PNEUMATIC
M	MAIN CONTROL AIR SUPPLY
M/S	MOTOR STARTER
OS	OCCUPANCY SENSOR
R	PILOT LIGHT OR BEACON R – RED LENS A – AMBER LENS B – BLUE LENS G – GREEN LENS
PE	PNEUMATIC–ELECTRIC SWITCH
POS	POSITION FEEDBACK
PS	PRESSURE SWITCH
PT	PRESSURE TRANSMITTER
R	RELAY, ELECTRIC
N	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)
AI	SIGNAL – DDC/EMS, ANALOG INPUT
AO	SIGNAL – DDC/EMS, ANALOG OUTPUT
DI	SIGNAL – DDC/EMS, DIGITAL INPUT
DO	SIGNAL – DDC/EMS, DIGITAL OUTPUT
AI	SIGNAL – PACKAGED EQUIPMENT, ANALOG INPUT
AO	SIGNAL – PACKAGED EQUIPMENT, ANALOG OUTPUT
DI	SIGNAL – PACKAGED EQUIPMENT, DIGITAL INPUT
DO	SIGNAL – PACKAGED EQUIPMENT, DIGITAL OUTPUT

SCHEMATIC SYMBOLS (CONT.)

SYMBOL	DESCRIPTION
DD	SMOKE DETECTOR – DUCT MOUNTED
SD	SMOKE DETECTOR – SPACE MOUNTED
S/S	START/STOP RELAY
SPT	STATIC PRESSURE TRANSMITTER
SP	STATIC PRESSURE SENSOR OR PROBE
SW	SWITCH
T	TEMPERATURE SENSOR – RIGID ELEMENT IN WELL
T	TEMPERATURE SENSOR – STRAP ON BULB
T	TEMPERATURE SENSOR – DUCT MOUNTED AVG ELEMENT
T	TEMPERATURE SENSOR – DUCT MOUNTED RIGID ELEMENT
T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)
T M	THERMOSTAT FOR NIGHT SETBACK
XF	TRANSFORMER
	VALVE – 2 WAY CONTROL VALVE
	VALVE – 3 WAY CONTROL VALVE
M	VALVE – 2 WAY CONTROL W/ POSITIONER
M	VALVE – 3 WAY CONTROL W/ POSITIONER
VFD	VARIABLE FREQUENCY DRIVE
VS	VELOCITY SENSOR
VIB	VIBRATION SWITCH
V	VOLTAGE SENSOR

WIRING SYMBOLS

SYMBOL	DESCRIPTION
	AUDIBLE DEVICE (AS DEFINED ON TC DRAWINGS)
M/S	COIL – MOTOR STARTER CONTACTOR
R	COIL – RELAY
TDR	COIL – TIME DELAY RELAY
VSD	COIL – VARIABLE SPEED DRIVE CONTACTOR
	COIL – EP OR SOLENOID VALVE
	CONTACT – INSTANT OPERATING, NO
	CONTACT – INSTANT OPERATING, NC
	CONTACT – TIMED AFTER COIL IS ENERGIZED, NOTC
	CONTACT – TIMED AFTER COIL IS ENERGIZED, NCTO
	CONTACT – TIMED AFTER COIL IS DE–ENERGIZED, NOTO
	CONTACT – TIMED AFTER COIL IS DE–ENERGIZED, NCTC
	GROUND
	MOTOR, SINGLE PHASE
R	PILOT LIGHT OR BEACON R – RED LENSE A – AMBER LENS B – BLUE LENSE G – GREEN LENS
R	PILOT LIGHT, WITH PUSH–TO–TEST
	PUSH BUTTON – MOMENTARY CONTACT, NO
	PUSH BUTTON – MOMENTARY CONTACT, NC
	PUSH BUTTON – MOMENTARY CONTACT, NO & NC
	PUSH BUTTON – MOMENTARY, NO (MUSHROOM HEAD)
	PUSH BUTTON – MOMENTARY, NC (MUSHROOM HEAD)

WIRING SYMBOLS (CONT.)

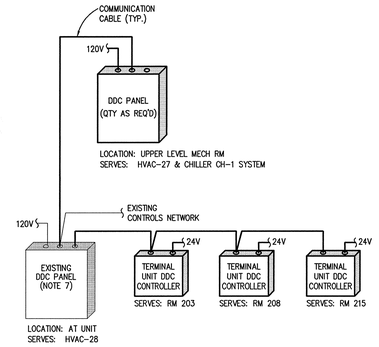
SYMBOL	DESCRIPTION
1 2	SWITCH – 2 POSITION SELECTOR
H O A	SWITCH – 3 POSITION SELECTOR HAND/OFF/AUTO
	SWITCH – FLOW (AIR, WATER, ETC.), NO
	SWITCH – FLOW (AIR, WATER, ETC.), NC
	SWITCH – LIMIT, NO
	SWITCH – LIMIT, NO, HELD CLOSED
	SWITCH – LIMIT, NC
	SWITCH – LIMIT, NC, HELD OPEN
	SWITCH – LIQUID LEVEL, NO
	SWITCH – LIQUID LEVEL, NC
	SWITCH – MANUAL SPST, NO
	SWITCH – MANUAL DPDT, NO
	SWITCH – MANUAL SPST, NC
	SWITCH – MANUAL DPDT, NC
	SWITCH – MANUAL SPDT
	SWITCH – MANUAL DPDT
	SWITCH – PRESSURE & VACUUM, NO
	SWITCH – PRESSURE & VACUUM, NC
	SWITCH – TEMPERATURE ACTUATED, NO
	SWITCH – TEMPERATURE ACTUATED, NC
	THERMAL OVERLOAD, SINGLE PHASE
OL'S	THERMAL OVERLOAD CONTACTS – 3 PHASE
	TRANSFORMER
	WIRE TERMINATION AT DEVICE
	WIRE TO WIRE TERMINATION
	WIRING NOT CONNECTED

WIRING TERMS

ABBREVIATION	DESCRIPTION
SPST	SINGLE POLE SINGLE THROW
SPDT	SINGLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPDT	DOUBLE POLE DOUBLE THROW
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NCTC	NORMALLY CLOSED TIMED CLOSED

NOTE: REFER TO MECHANICAL STANDARDS ON DRAWING M0.1 FOR ADDITIONAL SYMBOLS & ABBREVIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL DRAWINGS.

NOTE: ALL SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

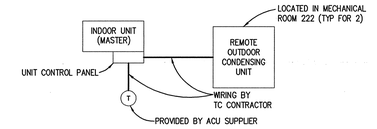


DDC SYSTEM ARCHITECTURE

NO SCALE

NOTES:

1. EXISTING DDC SYSTEM IS THE "SYSTEM 600" AS MANUFACTURERED AND PROVIDED BY SIEMENS BUILDING TECHNOLOGIES, INC.
2. REFER TO SPECIFICATIONS AND TEMPERATURE CONTROL SCHEMATICS FOR THE REQUIRED POINTS ASSOCIATED FOR EACH HVAC SYSTEM.
3. GENERAL LOCATIONS ARE IDENTIFIED FOR DDC PANELS. TC CONTRACTOR SHALL DETERMINE LOCATION FOR DDC PANELS BASED ON POINT DENSITIES AND AVAILABLE MOUNTING SPACE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND COORDINATE WITH OTHER TRADES.
4. TC CONTRACTOR SHALL PROVIDE REQUIRED POWER SUPPLIES FROM DEDICATED AND/OR SPARE CIRCUITS IDENTIFIED ON ELECTRICAL PANEL SCHEDULES. COORDINATE WITH ELEC CONTRACTOR. REFER TO ELECTRICAL DRWGS FOR PANEL SCHEDULES AND PANEL LOCATIONS.
5. 24V TRANSFORMERS REQUIRED FOR TERMINAL UNIT DDC CONTROLLERS SHALL BE LOCATED IN MECH AND ELEC ROOMS NEAR ASSOCIATED DDC LAN CONNECTIONS – COORDINATE LOCATIONS. MAXIMUM TRANSFORMER SIZE SHALL BE 100 VA. PROVIDE ENCLOSURE(S) FOR TRANSFORMERS.
6. MSU SHALL UPDATE EXISTING CONTROLS DATABASE TO REFLECT REMOVAL OF EXISTING SYSTEMS. TC CONTRACTOR SHALL UPDATE CONTROLS DATABASE TO REFLECT INSTALLATION OF NEW SYSTEMS.
7. EXISTING DDC PANEL (FORMERLY SERVING EQUIPMENT NOW REMOVED) SHALL BE REUSED FOR NEW SYSTEMS. TC CONTRACTOR SHALL PROVIDE EXPANSION MODULES AS REQUIRED.

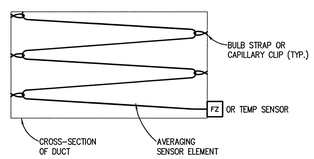


PACKAGED ACU FIELD WIRING & CONTROL

TYPICAL FOR 2

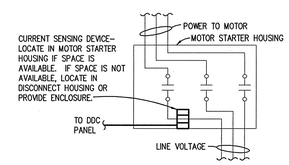
NOTES:

1. REFER TO MECH FLOOR PLANS FOR UNIT LOCATIONS.
2. TC CONTRACTOR SHALL PROVIDE FIELD WIRING AND COORDINATE WITH MANUFACTURER FOR EXACT TERMINATIONS AND WIRING REQUIREMENTS.



AVERAGING ELEMENT INSTALLATION DETAIL

NO SCALE



CURRENT SWITCH INSTALLATION DETAIL

NO SCALE

GENERAL NOTES

1. THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TC DRAWINGS.
2. "PROVIDE" IS DEFINED AS "FURNISH AND INSTALL".
3. TC CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
4. FOR TEMPERATURE CONTROL DRAWINGS ONLY: ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE PROVIDED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT SHALL BE PROVIDED BY OTHER TRADES UNLESS NOTED TO BE EXISTING.
5. ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS'S WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION.
6. TC CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
7. ALL TC PROVIDED COMPONENTS, AND ALL TC CONTRACTOR INSTALLED WIRING AND SHALL BE LABELED PER SPECIFICATIONS.
8. ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE ELECTRICAL SPECIFICATIONS.
9. VARIABLE SPEED DRIVES, FAN AND PUMP MOTOR STARTERS, STARTER WIRING, CONTROL VOLTAGE TRANSFORMERS AND ASSOCIATED POWER WIRING SHALL BE PROVIDED BY OTHER TRADES.
10. DUCT SMOKE DETECTORS SHALL BE FURNISHED, INSTALLED AND WIRED TO THE FIRE ALARM SYSTEM BY THE ELECTRICAL CONTRACTOR. TC CONTRACTOR SHALL PROVIDE DUCT SMOKE DETECTOR WIRING INTERLOCK TO MOTOR STARTERS OR VFD'S.
11. ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR UNLESS OTHERWISE NOTED. TC CONTRACTOR SHALL COORDINATE WITH VSD AND MOTOR STARTER SUPPLIERS TO DETERMINE EXACT WIRING REQUIREMENTS AND TERMINATION POINTS.
12. ALL DDC AND CONTROL INTERLOCK WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
13. ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH ELECTRICAL SPECIFICATION REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR A.C. WIRING AND THE OTHER FOR D.C. WIRING.
14. TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PANEL SCHEDULES FOR SPARE CIRCUITS OR CIRCUITS DEDICATED TO TEMPERATURE CONTROLS. COORDINATE CIRCUIT USE WITH ELECTRICAL CONTRACTOR.
15. TC CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
16. THERMOSTATS AND SPACE TEMPERATURE SENSORS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
17. TC CONTRACTOR SHALL PROVIDE AUXILIARY PANELS FOR REQUIRED PANEL MOUNTED EQUIPMENT SUCH AS RELAYS, TRANSDUCERS, CONTROL TRANSFORMERS, ETC. AUXILIARY PANELS SHALL BE LOCATED NEXT TO ASSOCIATED DDC PANEL.
18. REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSE IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
19. CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
20. FREEZESTATS SHALL BE MOUNTED ON UPSTREAM FACE OF COOLING COILS. FREEZESTAT QUANTITY SHALL BE ONE PER 20 SQ FT OF CROSS SECTIONAL AREA.
21. CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
22. ALL CONTROL VALVES, CONTROL DAMPERS AND ASSOCIATED CONTROL ACTUATORS IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TC CONTRACTOR UNLESS OTHERWISE NOTED. DAMPER SIZE AND LOCATIONS ARE INDICATED ON MECHANICAL FLOOR PLAN DRAWINGS.
23. ALL CONTROL VALVES AND DAMPERS FURNISHED BY THE TC CONTRACTOR SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR. ALL PIPE PENETRATIONS AND BASIC FITTINGS REQUIRED FOR SENSOR INSTALLATIONS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR.
24. DAMPER ACTUATORS SHALL BE INSTALLED BY TC CONTRACTOR.
25. ALL INSTRUMENTATION TUBING REQUIRED FOR DPS AND DPT COMPONENT INSTALLATIONS SHALL BE PROVIDED BY TC CONTRACTOR.
26. TC CONTRACTOR SHALL FIELD MOUNT ALL REQUIRED PACKAGED CONTROL COMPONENTS FURNISHED BY EQUIPMENT SUPPLIERS WHERE INDICATED. ALL REQUIRED 24V AND 120V PACKAGED CONTROL FIELD WIRING SHALL BE PROVIDED BY TC CONTRACTOR UNLESS NOTED OTHERWISE. TC CONTRACTOR SHALL COORDINATE SPECIFIC SYSTEM WIRING REQUIREMENTS WITH PACKAGED EQUIPMENT SUPPLIERS.
27. EXISTING MAIN AIR SUPPLY SHALL BE EXTENDED TO NEW CONTROLS.

SHEET:	OF:
I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B–151–76
	CARD NO: CP 03111

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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Temperature Control Standards and General Notes

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	DJB
CHECKED	JWC
APPROVED	DJE

PROJECT NO.

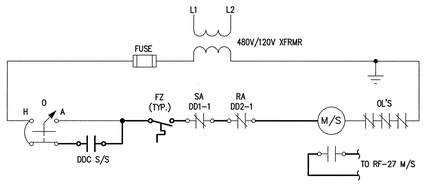
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TMP PROJECT NO. 03118

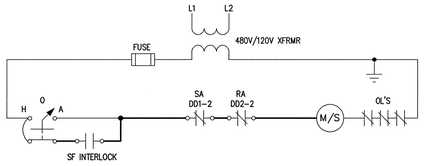
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M6.1

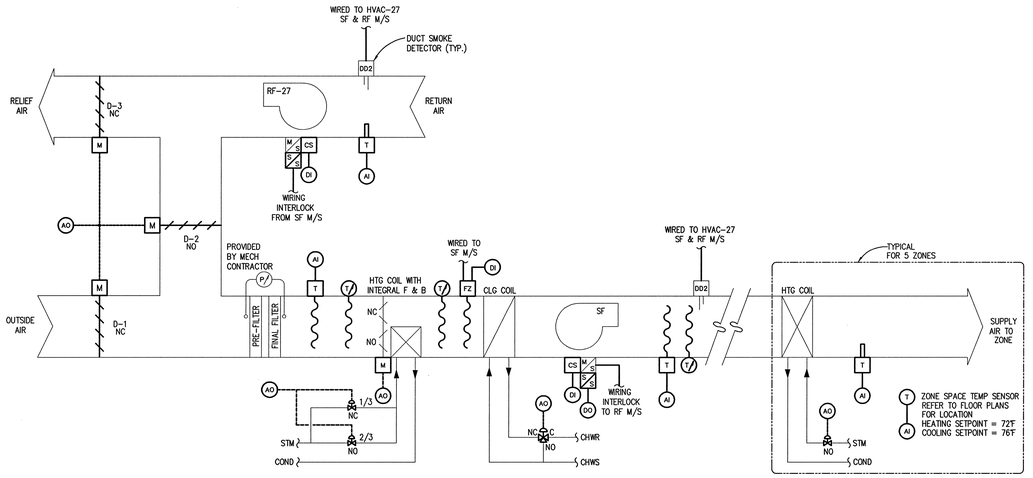
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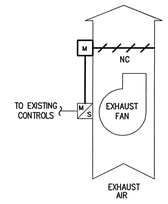
HVAC-27 SF M/S WIRING



RF-27 M/S WIRING



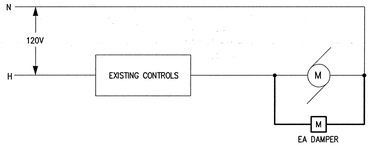
HVAC-27 CONTROL



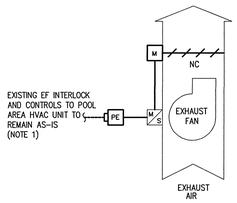
EXISTING EF-21 NEW DAMPER CONTROL

SEQUENCE OF OPERATION

1. EXHAUST FAN SHALL BE STARTED AND STOPPED BY EXISTING CONTROLS. WIRING INTERLOCK SHALL OPEN DAMPERS.



EF-21 M/S WIRING



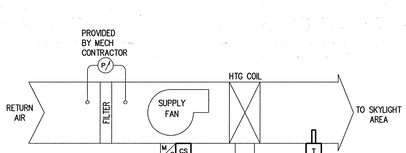
POOL AREA EF-1 THROUGH EF-6 CONTROL

TYPICAL FOR 6
NOTES:

1. TC CONTRACTOR SHALL DISCONNECT EXISTING EF CONTROLS, PROVIDE NEW PE SWITCH AND EXTEND PNEUMATIC TUBING FROM EXISTING TC CABINET #9 LOCATED IN EAST 3RD LEVEL MECH RM TO EF M/S.

SEQUENCE OF OPERATION

1. EXHAUST FANS ARE INTRLOCKED TO POOL AREA HVAC UNIT. WIRING INTERLOCK SHALL OPEN DAMPERS.

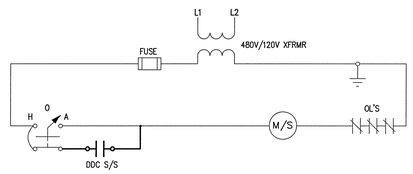


VF-1 CONTROL

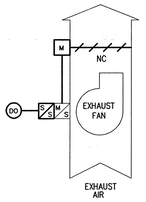
SEQUENCE OF OPERATION:

1. DDC SHALL ACTIVATE SUPPLY FAN WHEN OUTSIDE AIR TEMP IS BELOW 60°F.
2. DDC SHALL MODULATE HEATING VALVE TO MAINTAIN DISCHARGE AIR TEMP SETPOINT BASED ON THE FOLLOWING OA RESET SCHEDULE:

DISCHARGE AIR TEMP SETPOINT RESET SCHEDULE	
OUTSIDE AIR TEMP.	DISCHARGE AIR TEMPERATURE
≤ 25°F	90°F
60°F	75°F



VF-1 SF M/S WIRING



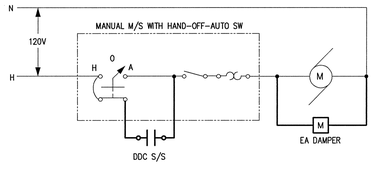
EF- 13, 15, 20, 22, 25, 31 & 32 CONTROL

TYPICAL

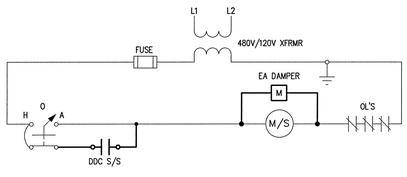
EF-13 SERVES EAST TEAM LOCKERS
EF-15 SERVES MEN'S SHOWERS
EF-20 SERVES WEST TEAM LOCKERS
EF-22 SERVES WOMEN'S SHOWERS
EF-25 SERVES TOILET RM
EF-31 SERVES STORAGE RM 103
EF-32 SERVES STORAGE/CUSTODIAL RM 101

SEQUENCE OF OPERATION

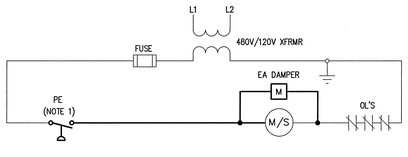
1. EXHAUST FAN SHALL BE STARTED AND STOPPED BY DDC BASED ON TIME SCHEDULE. WIRING INTERLOCK SHALL OPEN DAMPERS.



EF-13, 31 & 32 M/S WIRING



EF-15, 20, 22, & 25 M/S WIRING



POOL AREA EF-1 THROUGH EF-6 M/S WIRING

TYPICAL FOR 6
NOTES:

1. NEW PE CONNECTED TO EXISTING CONTROLS LOCATED IN EXISTING TC CABINET #9.

TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M6.1 APPLY TO THIS DRAWING.

SEQUENCE OF OPERATION

AIR HANDLING UNIT HVAC-27:

NOTE: ALL SETPOINTS INCLUDING RESET SCHEDULE SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL FAN MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION.

1. SUPPLY FAN WITH INTERLOCKED RETURN FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. AHU SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE (COMPENSATED BY OPTIMUM START PROGRAM) AND UNOCCUPIED CYCLE MODE.
2. PRE-OCCUPANCY PURGE MODE SHALL BE UTILIZED WITH OPTIMUM START PROGRAM. WHEN ALL ASSOCIATED ZONE SPACE TEMPERATURES ARE ABOVE RESPECTIVE COOLING SETPOINTS AND OA TEMP IS LESS THAN RA TEMP, MIXED AIR DAMPERS SHALL BE MODULATED OPEN TO FULL OA POSITION.
3. FOR HEATING AND COOLING OCCUPIED MODE, AHU SHALL BE CONTROLLED TO MAINTAIN DISCHARGE AIR TEMP SETPOINT AND ZONE TEMPERING COILS SHALL BE CONTROLLED BY DDC TO MAINTAIN RESPECTIVE SPACE TEMP SETPOINTS.
4. FOR HEATING UNOCCUPIED MODE, AHU SHALL CYCLE ON & OFF TO MAINTAIN A SETBACK SPACE TEMPERATURE OF 62°F. DDC SHALL REFERENCE ALL ZONE SPACE TEMP SENSORS ASSOCIATED WITH AHU AND CYCLE AHU BASED ON LOWEST SPACE TEMP READING.
5. FOR COOLING UNOCCUPIED MODE, AHU SHALL CYCLE ON & OFF TO MAINTAIN A SETUP TEMPERATURE OF 85°F. DDC SHALL REFERENCE ALL ZONE SPACE TEMP SENSORS ASSOCIATED WITH AHU AND CYCLE AHU BASED ON HIGHEST SPACE TEMP READING.
6. SUPPLY FAN AND RETURN FAN STATUS SHALL BE MONITORED BY DDC THRU RESPECTIVE CURRENT SWITCH. SF CURRENT SWITCH SHALL PROVIDE FEEDBACK TO ENABLE TEMPERATURE CONTROLS. ABNORMAL STATUS CONDITION FOR SF OR RF SHALL ACTIVATE ALARM.
7. WHEN AHU IS ACTIVATED DURING OCCUPIED MODE; RELIEF AIR DAMPER SHALL BE OPENED BY DDC AND OUTSIDE & RETURN AIR DAMPERS SHALL BE ALLOWED TO MODULATE AS DESCRIBED. WHEN AHU IS DEACTIVATED OR OPERATING IN UNOCCUPIED CYCLE MODE OR MORNING WARM-UP MODE, DAMPERS SHALL REMAIN IN NORMAL POSITIONS.
8. WHEN OA TEMP IS GREATER THAN RA TEMP; OUTSIDE & RETURN AIR DAMPERS SHALL REMAIN AT MINIMUM OA POSITION AND COOLING COIL VALVE SHALL BE MODULATED TO MAINTAIN DA TEMP SETPOINT.
9. WHEN OA TEMP IS LESS THAN OR EQUAL TO RA TEMP AND DA TEMP IS ABOVE SETPOINT; DDC SHALL MODULATE OUTSIDE & RETURN AIR DAMPERS ABOVE MINIMUM OA POSITION IN SEQUENCE WITH COOLING COIL VALVE MODULATION TO MAINTAIN DA TEMP SETPOINT.
10. WHEN OA TEMP IS LESS THAN OR EQUAL TO RA TEMP AND DA TEMP IS BELOW SETPOINT; OUTSIDE & RETURN AIR DAMPERS SHALL REMAIN AT MINIMUM OA POSITION AND HEATING COIL VALVE SHALL BE MODULATED TO MAINTAIN DA TEMP SETPOINT.
11. WHEN OA TEMP IS ABOVE 38°F, FACE & BYPASS DAMPERS SHALL BE IN FULL FACE POSITION AND STEAM HEATING COIL 1/3 & 2/3 VALVES WITH OFFSET CONTROL RANGES SHALL BE MODULATED IN SEQUENCE BY DDC COMMON CONTROL SIGNAL FOR DESCRIBED DA TEMP CONTROL. WHEN OA TEMP IS 38°F OR BELOW, STEAM HEATING COIL 1/3 & 2/3 VALVES SHALL BE IN FULL OPEN POSITION AND FACE & BYPASS DAMPERS SHALL MODULATE FOR DESCRIBED DA TEMP CONTROL.
12. DISCHARGE AIR TEMP LOW LIMIT SETPOINT OF 45°F SHALL PROVIDE OVERRIDE CONTROL. IF HEATING COIL VALVE IS MODULATED TO FULL OPEN POSITION; OUTSIDE & RETURN AIR DAMPERS SHALL BE MODULATED BELOW MINIMUM OA POSITION. DDC SHALL ACTIVATE "LOW LIMIT CONTROL" ALARM UPON THIS OPERATING CONDITION (OPERATOR SHOULD VERIFY HEATING COIL VALVE OPERATION).
13. DURING MORNING WARM-UP OR UNOCCUPIED HEATING CYCLE, DAT SETPOINT SHALL BE 90°F UNTIL BUILDING OCCUPANCY TIME OR WHEN OCCUPIED MODE SPACE TEMPERATURE IS REACHED IN ONE OF THE ASSOCIATED ZONES.
14. FREEZESTAT(S) SHALL DEACTIVATE SF & INTERLOCKED RF WHEN TEMPERATURE IS 38°F OR BELOW. DDC SHALL MONITOR FREEZESTAT STATUS AND ACTIVATE ALARM IF CONDITION OCCURS.
15. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE BOTH HVAC SUPPLY FANS & COMMON RETURN FAN WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
16. WHEN HVAC IS DEACTIVATED, COOLING COIL VALVE SHALL REMAIN CLOSED AND HEATING COIL VALVE SHALL BE MODULATED BY DDC BASED ON MA TEMP TO MAINTAIN LOW LIMIT PLENUM TEMP SETPOINT OF 50°F.

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	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

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PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Temperature Controls

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	DJB
CHECKED	JWC
APPROVED	DJE

PROJECT NO.

CP03111

TMP PROJECT NO. 03118

SHEET NO.

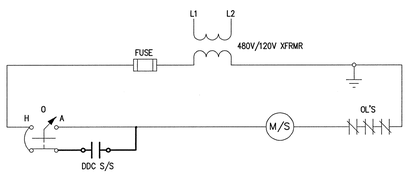
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TC GENERAL NOTES

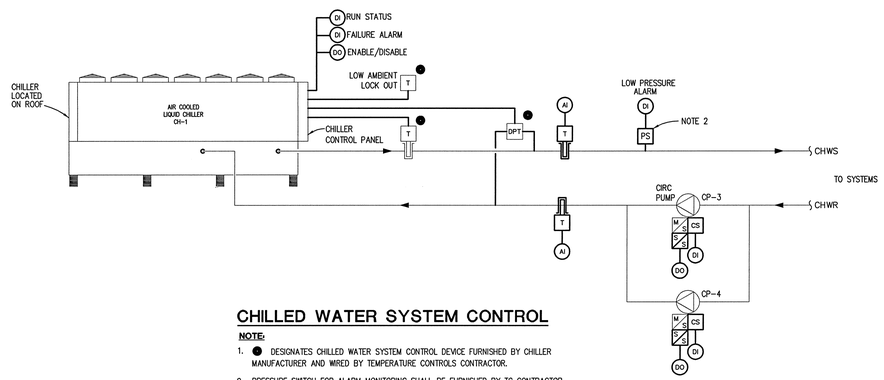
TC GENERAL NOTES ON DRAWING M6.1 APPLY TO THIS DRAWING.

SEQUENCE OF OPERATION



CHW PUMPS CP-3 & 4 M/S WIRING

TYPICAL



CHILLED WATER SYSTEM CONTROL

NOTE:

1. ● DESIGNATES CHILLED WATER SYSTEM CONTROL DEVICE FURNISHED BY CHILLER MANUFACTURER AND WIRED BY TEMPERATURE CONTROLS CONTRACTOR.
2. PRESSURE SWITCH FOR ALARM MONITORING SHALL BE FURNISHED BY TC CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.

SEQUENCE OF OPERATION

CHILLED WATER SYSTEM:

NOTE: ALL SETPOINTS AND TIME INTERVALS INCLUDING RESET SCHEDULE SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). ALL PUMP MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION.

1. CHILLED WATER SYSTEM OPERATION SHALL BE ENABLED BY DDC SYSTEM WHEN OUTDOOR AIR TEMPERATURE IS ABOVE 50 °F AND AT LEAST ONE OF THE HVAC'S THAT IS SERVED BY SYSTEM IS ACTIVATED.
2. THE CHW CIRCULATING PUMPS CP-3 & CP-4 SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. ONE OF THE TWO PUMPS SHALL BE ACTIVATED BY DDC WHEN SYSTEM IS ENABLED. THE OTHER WILL SERVE AS STANDBY.
3. DDC SHALL ALTERNATE PUMP OPERATION BASED ON RUNTIME HOURS OR AT THE BEGINNING OF EACH MONTH – OPERATOR SELECTABLE. ALTERNATION SHALL OCCUR AT BEGINNING OF NEXT CHILLER START CYCLE.
4. DDC SHALL MONITOR OPERATING STATUS OF EACH PUMP. UPON PUMP FAILURE, DDC SHALL ACTIVATE FAILURE ALARM AND AUTOMATICALLY START THE STANDBY PUMP.
5. CHILLER PACKAGED CONTROLS SHALL BE SET FOR REMOTE ENABLE FUNCTION BY OPERATORS.
6. WITH CHW PUMP ACTIVATED, DDC SHALL ACTIVATE CHILLER.
7. WHEN CHW FLOW IS PROVEN BY DIFFERENTIAL PRESSURE SWITCH WIRED IN SERIES WITH PARALLELED PUMP AUXILIARY CONTACTS, CHILLER INTERLOCKS ARE COMPLETE AND THE CHILLER PACKAGED CONTROL PANEL WITH INTEGRAL TEMPERATURE SENSORS SHALL SEQUENCE CHILLER OPERATION TO MAINTAIN THE CHILLER'S CHW SUPPLY SETPOINT OF 44°F (ADJUSTABLE AT CHILLER PANEL OR FROM REMOTE SETPOINT ADJUSTMENT THRU DDC).
8. DDC SHALL MONITOR CHILLER RUN STATUS AND CHILLER FAILURE ALARM.
9. DDC SHALL MONITOR LOW PRESSURE SWITCH AND ACTIVATE ALARM IF CONDITION OCCURS.

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SHEET TITLE

Temperature Controls

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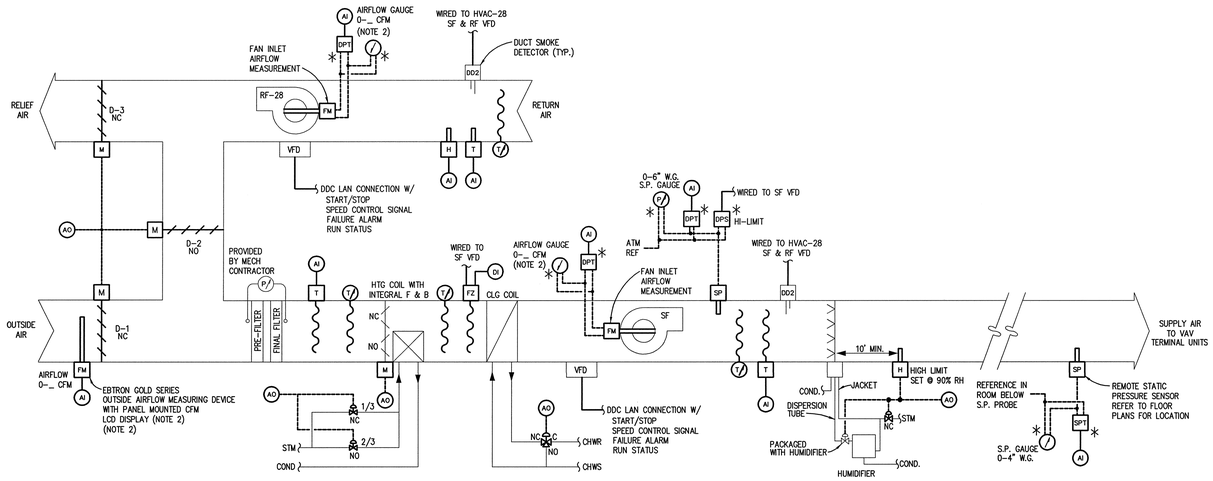
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TMP PROJECT NO. 03118

SHEET NO.

M6.3

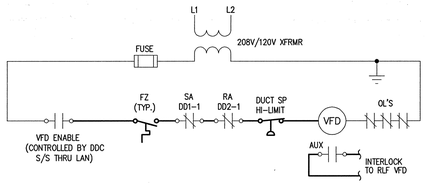
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HVAC-28 CONTROL

NOTES:

1. ✳ INDICATES PANEL MOUNTED COMPONENT.
2. AIRFLOW GAUGE RANGE SHALL BE GREATER THAN UNIT CFM. REFER TO MECH EQUIPMENT SCHDULES.

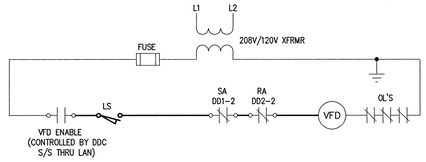


HVAC-28 SF VFD WIRING

TYPICAL

NOTE:

1. WIRING DETAIL IDENTIFIES INTENT AND DOES NOT INDICATE ACTUAL WIRING REQUIREMENTS. CONSULT WITH VFD SUPPLIER FOR THE ACTUAL WIRING REQUIREMENTS.

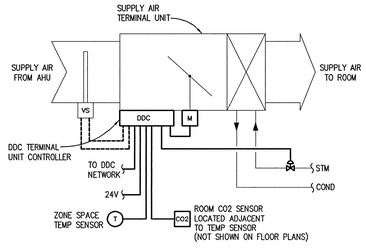


RF-28 VFD WIRING

TYPICAL

NOTE:

1. WIRING DETAIL IDENTIFIES INTENT AND DOES NOT INDICATE ACTUAL WIRING REQUIREMENTS. CONSULT WITH VFD SUPPLIER FOR THE ACTUAL WIRING REQUIREMENTS.



VAV TERMINAL UNIT CONTROL

NOTES:

1. REFER TO MECHANICAL FLOOR PLANS FOR UNIT QUANTITY, UNIT LOCATIONS AND ZONE SPACE TEMP SENSOR LOCATIONS.
2. TC CONTRACTOR SHALL PROVIDE 24V POWER SUPPLY TO TERMINAL UNIT CONTROLLER.

TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M6.1 APPLY TO THIS DRAWING.

SEQUENCE OF OPERATION

AIR HANDLING UNIT HVAC - 28:

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL FAN MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION.

1. SUPPLY FAN WITH SOFTWARE INTERLOCKED RETURN FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. HVAC UNIT SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE COMPENSATED BY OPTIMUM START PROGRAM AND UNOCCUPIED CYCLE MODE.
2. PRE-OCCUPANCY PURGE MODE SHALL BE UTILIZED WITH OPTIMUM START PROGRAM. WHEN ALL ASSOCIATED ZONE SPACE TEMPERATURES ARE ABOVE RESPECTIVE VAV TERMINAL UNIT COOLING SETPOINTS AND OA TEMP IS LESS THAN RA TEMP, OUTSIDE & RETURN AIR DAMPERS SHALL BE MODULATED OPEN TO FULL OA POSITION.
3. FOR HEATING AND COOLING OCCUPIED MODE, HVAC UNIT SHALL BE CONTROLLED TO MAINTAIN DISCHARGE AIR TEMP SETPOINT AND ZONE VAV TERMINAL UNITS WITH ASSOCIATED TEMPERING COILS SHALL BE CONTROLLED BY UNITARY DDC CONTROLLERS TO MAINTAIN RESPECTIVE SPACE TEMP SETPOINTS AND CO2 LEVEL SETPOINTS (REFER TO VAV TERMINAL UNIT SEQUENCE OF OPERATION).
4. FOR HEATING UNOCCUPIED MODE, HVAC UNIT SHALL CYCLE ON & OFF TO MAINTAIN A SETBACK SPACE TEMPERATURE OF 62°F. DDC SHALL REFERENCE ALL VAV TERMINAL UNIT CONTROLLERS ASSOCIATED WITH HVAC UNIT AND CYCLE HVAC UNIT BASED ON LOWEST SPACE TEMP READING.
5. FOR COOLING UNOCCUPIED MODE, HVAC UNIT SHALL CYCLE ON & OFF TO MAINTAIN A SETUP TEMPERATURE OF 85°F. DDC SHALL REFERENCE ALL VAV TERMINAL UNIT CONTROLLERS ASSOCIATED WITH HVAC UNIT AND CYCLE HVAC UNIT BASED ON HIGHEST SPACE TEMP READING.
6. SUPPLY FAN AND EXHAUST FAN STATUS SHALL BE MONITORED BY DDC THRU RESPECTIVE LAN COMMUNICATION CAPABILITIES. ABNORMAL STATUS CONDITION SHALL ACTIVATE ALARM.
7. VFD COMMON FAILURE ALARM FOR EACH FAN SHALL BE MONITORED BY DDC THRU RESPECTIVE LAN COMMUNICATION CAPABILITIES.
8. WHEN HVAC UNIT IS ACTIVATED IN THE OCCUPIED MODE; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL BE ALLOWED TO MODULATE AS DESCRIBED. WHEN HVAC UNIT IS DEACTIVATED OR OPERATING IN UNOCCUPIED CYCLE MODE OR MORNING WARM-UP MODE; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL REMAIN IN NORMAL POSITIONS.
9. DDC SHALL MONITOR OUTDOOR AIRFLOW AND MODULATE OUTSIDE, RETURN & RELIEF AIR DAMPERS ACCORDINGLY WITHIN INDICATED OUTDOOR AIRFLOW MINIMUM POSITION RANGE (LOW & HIGH LIMITS) TO MAINTAIN DEMAND CONTROL VENTILATION REQUIREMENTS FOR EACH INDIVIDUAL TERMINAL UNIT ZONE. THE TERMINAL UNIT ZONE FURTHEST ABOVE RESPECTIVE CO2 SETPOINT SHALL HAVE OVERRIDE CONTROL OF THE HVAC UNIT OUTSIDE, RETURN & RELIEF AIR DAMPERS. OUTDOOR AIRFLOW MINIMUM POSITION RANGE SHALL BE 3,270 CFM TO 810 CFM.
10. WHEN OA TEMP IS GREATER THAN RA TEMP; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL REMAIN AT MINIMUM OA POSITION AND COOLING COIL VALVE SHALL BE MODULATED TO MAINTAIN DA TEMP SETPOINT.
11. WHEN OA TEMP IS LESS THAN OR EQUAL TO RA TEMP AND DA TEMP IS ABOVE SETPOINT; DDC SHALL MODULATE OUTSIDE, RETURN & RELIEF AIR DAMPERS ABOVE MINIMUM OA POSITION IN SEQUENCE WITH COOLING COIL VALVE MODULATION TO MAINTAIN DA TEMP SETPOINT.
12. WHEN OA TEMP IS LESS THAN OR EQUAL TO RA TEMP AND DA TEMP IS BELOW SETPOINT, OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL REMAIN AT MINIMUM OA POSITION AND HEATING COIL VALVES SHALL BE MODULATED TO MAINTAIN DA TEMP SETPOINT.
13. DISCHARGE AIR TEMP SETPOINT SHALL BE 55°F.
14. DISCHARGE AIR TEMP LOW LIMIT SETPOINT OF 45°F SHALL PROVIDE OVERRIDE CONTROL. IF HEATING COIL VALVES ARE MODULATED TO FULL OPEN POSITION; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL BE MODULATED BELOW MINIMUM OA POSITION. DDC SHALL ACTIVATE "LOW LIMIT CONTROL" ALARM UPON THIS OPERATING CONDITION (OPERATOR SHOULD VERIFY OPERATION OF HEATING COIL VALVES).
15. DURING MORNING WARM-UP OR UNOCCUPIED HEATING CYCLE, DAT SETPOINT SHALL BE 90°F UNTIL BUILDING OCCUPANCY TIME OR WHEN SPACE TEMP SETPOINT IS REACHED IN ONE OF THE ASSOCIATED ZONES.
16. WHEN OA TEMP IS ABOVE 38°F, FACE & BYPASS DAMPERS SHALL BE IN FULL FACE POSITION AND STEAM HEATING COIL 1/3 & 2/3 VALVES WITH OFFSET CONTROL RANGES SHALL BE MODULATED IN SEQUENCE BY DDC COMMON CONTROL SIGNAL FOR DESCRIBED DA TEMP CONTROL. WHEN OA TEMP IS 38°F OR BELOW, STEAM HEATING COIL 1/3 & 2/3 VALVES SHALL BE IN FULL OPEN POSITION AND FACE & BYPASS DAMPERS SHALL MODULATE FOR DESCRIBED DA TEMP CONTROL.
17. SF VFD SHALL BE MODULATED BY DDC TO MAINTAIN REMOTE SYSTEM SUPPLY AIR STATIC PRESSURE SETPOINT THAT SHALL BE RESET BASED ON DAMPER POSITION FEEDBACK FROM ASSOCIATED VAV TERMINAL UNIT CONTROLLERS AS FOLLOWS: SETPOINT SHALL BE ADJUSTED TO ALLOW 1 SA TERMINAL UNIT TO OPERATE ABOVE 90% OPEN DAMPER POSITION. LESS THAN 1 ABOVE 90%, SETPOINT SHALL BE SLOWLY DECREASED BY 0.1" W.G. EVERY HALF-HOUR. MORE THAN 1 ABOVE 90%, SETPOINT SHALL BE SLOWLY INCREASED BY 0.1" W.G. EVERY HALF-HOUR. SETPOINT RANGE SHALL BE MINIMUM 0.5" W.G. TO A MAXIMUM VALUE WHICH SHALL BE DETERMINED BY THE AIR BALANCE CONTRACTOR. THE MAXIMUM VALUE SHALL BE THE STARING POINT.
18. DISCHARGE STATIC PRESSURE HIGH LIMIT AT HVAC UNIT WITH SETPOINT OF 5.0" W.G. SHALL PROVIDE OVERRIDE CONTROL AND HIGH LIMIT SWITCH WITH SETPOINT OF 5.5" W.G. SHALL PROVIDE HARDWIRED SAFETY. DDC SHALL ACTIVATE ALARM IF OPERATING IN OVERRIDE CONDITION.
19. RF VFD SHALL BE MODULATED TO MAINTAIN A 400 CFM DIFFERENTIAL SETPOINT BETWEEN SUPPLY AIRFLOW AND RETURN AIRFLOW. FOR WARM-UP AND UNOCCUPIED CYCLE MODES (WHEN RETURN AIR & RELIEF AIR DAMPERS ARE IN NORMAL POSITION), THE CFM DIFFERENTIAL SHALL BE ZERO AND SF SPEED CONTROL SHALL BE LIMITED BY THE MAXIMUM AVAILABLE RF AIRFLOW.
20. WHEN OA TEMP IS BELOW 55°F, RETURN HUMIDITY IS 5% BELOW SETPOINT, AND SF AIRFLOW IS PROVEN BY DISCHARGE STATIC PRESSURE; DDC SHALL ACTIVATE HUMIDIFIER TO MAINTAIN RETURN HUMIDITY SETPOINT OF 30% RH. DISCHARGE AIR HUMIDITY HIGH LIMIT WITH SETPOINT OF 90% RH SHALL PROVIDE OVERRIDE CONTROL.
21. FREEZESTAT(S) SHALL DEACTIVATE SF & RF WHEN TEMPERATURE IS 38°F OR BELOW. DDC SHALL MONITOR FREEZESTAT STATUS AND ACTIVATE ALARM IF CONDITION OCCURS.
22. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SF & RF WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
23. WHEN HVAC UNIT IS DEACTIVATED, COOLING COIL VALVE SHALL REMAIN CLOSED AND HEATING COIL VALVES SHALL BE MODULATED BY DDC BASED ON MA TEMP TO MAINTAIN LOW LIMIT PLENUM TEMP SETPOINT OF 50°F.

SEQUENCE OF OPERATION

VAV TERMINAL UNIT w/ DEMAND CONTROL VENTILATION:

1. WHEN ZONE SPACE TEMP RISES ABOVE COOLING SETPOINT, THE SUPPLY AIR TERMINAL UNIT CONTROLLER SHALL KEEP THE TEMPERING COIL VALVE CLOSED AND SHALL MODULATE THE SUPPLY AIRFLOW BETWEEN ITS MINIMUM AND MAXIMUM SETTING TO MAINTAIN ZONE SPACE TEMP SETPOINT.
2. WHEN ZONE SPACE TEMPERATURE FALLS BELOW HEATING SETPOINT, THE SUPPLY TERMINAL UNIT CONTROLLER SHALL KEEP THE SUPPLY AIRFLOW AT ITS MINIMUM SETTING AND SHALL MODULATE THE TEMPERING COIL CONTROL VALVE TO MAINTAIN THE ZONE SPACE TEMPERATURE SETPOINT. IF THE ZONE SPACE TEMP IS BELOW HEATING SETPOINT WITH TEMPERING COIL VALVE FULL OPEN, THE SUPPLY TERMINAL UNIT CONTROLLER SHALL MODULATE THE SUPPLY AIRFLOW BETWEEN ITS MINIMUM AND MAXIMUM SETTING TO MAINTAIN ZONE SPACE TEMPERATURE.
3. THE SUPPLY AIR TERMINAL UNIT'S MINIMUM AND MAXIMUM VOLUME AIRFLOW SETTINGS SHALL BE AS INDICATED ON THE SHEET METAL FLOOR PLANS
4. ZONE SPACE TEMPERATURE SETPOINTS SHALL BE AS FOLLOWS:
   - HEATING OCCUPIED SETPOINT = 72°F
   - HEATING UNOCCUPIED SETPOINT = 62°F
   - COOLING OCCUPIED SETPOINT = 76°F
   - COOLING UNOCCUPIED SETPOINT = 85°F

   DURING BUILDING UNOCCUPANCY, RESPECTIVE HVAC UNIT SHALL CYCLE AS REQUIRED TO MAINTAIN BUILDING SETBACK AND SETUP TEMP SETPOINTS AS INDICATED ON HVAC SEQUENCE OF OPERATION.
5. WHEN ROOM CARBON DIOXIDE LEVEL RISES ABOVE 1100 PPM SETPOINT, THE SUPPLY TERMINAL UNIT CONTROLLER SHALL OVERRIDE TEMPERATURE CONTROL AND MODULATE DAMPER OPEN TO INCREASE SUPPLY AIRFLOW UNTIL CO2 SETPOINT IS SATISFIED. THE TEMPERING COIL VALVE SHALL BE MODULATED TO MAINTAIN ZONE SPACE TEMP SETPOINT.
6. WHEN ROOM CARBON DIOXIDE LEVEL IS ABOVE 1100 PPM SETPOINT AND SUPPLY AIRFLOW IS AT MAXIMUM, THE SUPPLY TERMINAL UNIT CONTROLLER SHALL SIGNAL THE RESPECTIVE HVAC TO MODULATE MIXING DAMPERS TO INCREASE OUTSIDE AIRFLOW UNTIL ZONE CO2 SETPOINT IS SATISFIED. THE TERMINAL UNIT ZONE FURTHEST ABOVE CO2 SETPOINT SHALL HAVE OVERRIDE CONTROL OF THE HVAC MIXING DAMPERS.
7. WHEN ROOM CARBON DIOXIDE LEVEL FALLS BELOW 1100 PPM SETPOINT AFTER BEING IN VENTILATION OVERRIDE MODE, HVAC MIXING DAMPERS (IF OVERRIDDEN) SHALL MODULATE CLOSED TOWARDS HVAC CONTROLLED POSITION FOLLOWED BY MODULATING THE TERMINAL UNIT DAMPER CLOSED UNTIL TEMPERING COIL VALVE IS CLOSED OR UNTIL TERMINAL UNIT DAMPER IS AT MINIMUM AIRFLOW POSITION.
8. WHEN RESPECTIVE HVAC UNIT IS DEACTIVATED; THE VAV TERMINAL UNIT DAMPER SHALL REMAIN IN MINIMUM POSITION AND THE TEMPERING COIL VALVE SHALL REMAIN CLOSED. THE PERIMETER HEATING VALVE(S) SHALL BE MODULATED TO MAINTAIN HEATING UNOCCUPIED ZONE SPACE TEMP SETPOINT.
9. THE DDC TERMINAL UNIT CONTROLLER SHALL RECALIBRATE THE AIRFLOW SENSOR ONCE A WEEK MINIMUM. THE RECALIBRATION PROCESS SHALL BE STAGGERED AMONGST THE TERMINAL UNITS SO THE DUCT STATIC PRESSURE DOES NOT EXCEED LIMITS.
10. POSITION FEEDBACK (CONTROL SIGNAL) FOR VAV TERMINAL UNIT DAMPER, TEMPERING COIL VALVE, AND PERIMETER HEATING CONTROL VALVE(S) SHALL BE DISPLAYED WITH SYSTEM GRAPHICS.

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Temperature Controls

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	DJB
CHECKED	JWC
APPROVED	DJE

PROJECT NO.

CP03111

TMP PROJECT NO. 03118

SHEET NO.

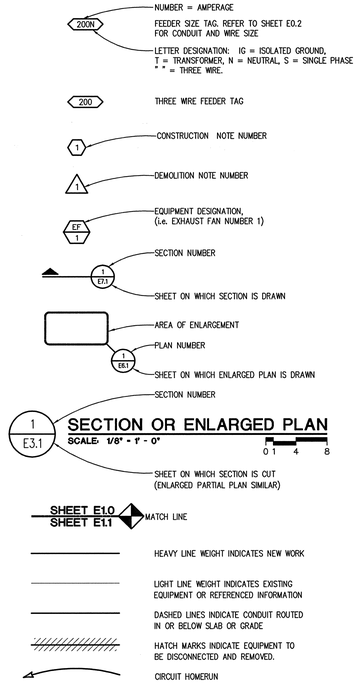
M6.4

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ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERES	MAX	MAXIMUM
AF	AMPERES FRAME (BREAKER RATING)	MCB	MAIN CIRCUIT BREAKER
A.F.F.	ABOVE FINISH FLOOR	MCC	MOTOR CONTROL CENTER
AIC	AMPS INTERRUPTING CAPACITY	MDP	MAIN DISTRIBUTION PANEL
AT	AMPERES TRIP (BREAKER SETTING)	MECH	MECHANICAL
ATS	AUTOMATIC TRANSFER SWITCH	MIN	MINIMUM
AUX	AUXILIARY	MISC.	MISCELLANEOUS
		MLO	MAIN LUGS ONLY
BKR	BREAKER	MTD	MOUNTED
BPS	BOLTED PRESSURE SWITCH	MTG	MOUNTING
		MTR	MOTOR
C	CONDUIT	NC	NORMALLY CLOSED
CB	CIRCUIT BREAKER	NEC	NATIONAL ELECTRICAL CODE
CKT	CIRCUIT	NF	NON-FUSIBLE
CT	CURRENT TRANSFORMER	NIC	NOT IN CONTRACT
		NL	NIGHT LIGHT
DEMO	DEMOLITION	NO	NORMALLY OPEN
DIM	DIMENSION	NTS	NOT TO SCALE
DISC	DISCONNECT		
DP	DISTRIBUTION PANEL	OC	ON CENTER
DWG	DRAWING		
		P	POLE
EBU	EMERGENCY BATTERY UNIT	PB	PUSHBUTTON STATION
EC	ELECTRICAL CONTRACTOR	PH	PHASE
ELEC	ELECTRICAL	PT	POTENTIAL TRANSFORMER
EM/ EMERG	EMERGENCY		
EMT	ELECTRICAL METALLIC TUBING		
EO	ELECTRICALLY OPERATED	RECEPT.	RECEPTACLE
EWC	ELECTRIC WATER COOLER	RDP	RECEPTACLE DISTRIBUTION PANEL
EXIST	EXISTING	RP	RECEPTACLE PANEL
		RSC	RIGID STEEL CONDUIT
FA	FIRE ALARM		
FLA	FULL LOAD AMPS	SCHED	SCHEDULE
FLR	FLOOR	SW	SWITCH
FOH	FRONT OF HOUSE	SWBD	SWITCHBOARD
FU	FUSE	SWGR	SWITCHGEAR
G/GRD/EG	GROUND	TB	TERMINAL BOX
GFI	GROUND FAULT INTERRUPTER	TELECOM	TELECOMMUNICATIONS
		TTB	TELEPHONE TERMINAL BACKBOARD
HOA	HAND-OFF-AUTO	TYP	TYPICAL
HP	HORSEPOWER		
HV	HIGH VOLTAGE	U.O.N.	UNLESS OTHERWISE NOTED
HZ	HERTZ		
		V	VOLTS
IG	ISOLATED GROUND		
		W	WIRE
JB	JUNCTION BOX	WP	WEATHERPROOF
KV	KILOVOLT	XFMR	TRANSFORMER
KVA	KILO VOLT-AMPERES	XP	EXPLOSION PROOF
KW	KILOWATT		
KWH	KILOWATT - HOURS	(E)	EXISTING
LA	LIGHTING ARRESTOR	(R)	RELOCATED
LP	LIGHTING PANEL		

STANDARD METHODS OF NOTATION



ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION
FAE	FIXTURE TYPE
	RECESSED OR SURFACE MOUNTED LIGHTING FIXTURE
	RECESSED OR SURFACE MOUNTED NIGHT LIGHTING FIXTURE
	SURFACE MOUNTED LIGHTING FIXTURE
	SURFACE MOUNTED NIGHT LIGHTING FIXTURE
	WALL MOUNTED LIGHTING FIXTURE
	LIGHTING FIXTURE
	NIGHT LIGHTING FIXTURE
	DIRECTIONAL RECESSED OR SURFACE MOUNTED LIGHTING FIXTURE
	WALL SCONCE
	TRACK LIGHTING TRACK
	TRACK LIGHTING FIXTURE
	EMERGENCY LIGHTING UNIT
	POLE MOUNTED LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE - POST TOP
	BOLLARD LIGHTING FIXTURE
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE - WALL MOUNTED
S	SINGLE POLE TOGGLE SWITCH
S2	TWO POLE TOGGLE SWITCH
S3	3 WAY TOGGLE SWITCH
S4	4 WAY TOGGLE SWITCH
K	KEY OPERATED SWITCH
K3	3 WAY KEY OPERATED SWITCH
K4	4 WAY KEY OPERATED SWITCH
D	DIMMER SWITCH
D3	3 WAY DIMMER SWITCH
SP	PILOT SWITCH
	DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
	3-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
SO	OCCUPANCY SENSOR WALL SWITCH
	OCCUPANCY SENSOR DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
SL	LOW VOLTAGE SWITCH
TC	TIME CLOCK
C	CONTACTOR
P	PHOTOCELL
TT	TWIST TIMER
OS X	OCCUPANCY SENSOR - REFER TO SHEET E0.2 "X" INDICATES TYPE
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE
	QUAD RECEPTACLE
	DUPLEX RECEPTACLE MOUNTED 8" ABOVE COUNTER TOP (UNLESS NOTED OTHERWISE) (SIMILAR FOR ISOLATED GROUND, EMERGENCY AND GFI RECEPTACLES)
	DUPLEX RECEPTACLE-GROUND FAULT INTERRUPTER
	DUPLEX EMERGENCY RECEPTACLE
	DUPLEX ISOLATED GROUND RECEPTACLE WITH DEDICATED NEUTRAL CONDUCTOR
	QUAD ISOLATED GROUND RECEPTACLE WITH DEDICATED NEUTRAL CONDUCTOR
	CEILING MOUNTED DUPLEX RECEPTACLE
	SPECIAL RECEPTACLE - REFER TO SHEET E0.2
	MULTI-OUTLET RACEWAY
	BRANCH CIRCUIT PANELBOARD
	MOTOR CONTROL CENTER
T	TRANSFORMER
	DISTRIBUTION PANEL

SYMBOL	DESCRIPTION
PTX	POKE THRU SERVICE FITTING "X" INDICATES TYPE
FBX	FLOOR BOX SERVICE FITTING "X" INDICATES TYPE
AFX	ACCESS FLOOR SERVICE FITTING "X" INDICATES TYPE
RX	CORD REEL "X" INDICATES TYPE
RGP	REMOTE GENERATOR ANNUCIATOR PANEL
ATS	AUTOMATIC TRANSFORMER SWITCH
UPS	UN-INTERRUPTABLE POWER SUPPLY
VFC	VARIABLE FREQUENCY/ CONTROLLER.
	MOTOR
	MANUAL MOTOR STARTER
	MOTOR STARTER
	COMBINATION MOTOR STARTER
	NON-FUSIBLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
CB	ENCLOSED CIRCUIT BREAKER
	PUSH BUTTON STATION
	JUNCTION BOX
	HARD WIRE POWER CONNECTION
DP	AUTOMATIC DOOR CONTROLLER
PP	AUTOMATIC DOOR PUSH PAD OPERATOR
	GROUND ROD
	GROUND CONNECTION
	CONDUIT UP
	CONDUIT DOWN
	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET MOUNTED 8" ABOVE COUNTERTOP
	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET FLOOR MOUNTED
	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET
X	TELECOMMUNICATION OUTLET "X" INDICATES TYPE
X	TELECOMMUNICATION OUTLET MOUNTED 8" ABOVE COUNTERTOP "X" INDICATES TYPE
X	TELECOMMUNICATION FLOOR MOUNTED OUTLET "X" INDICATES TYPE
X	TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE
	TELECOMMUNICATION BACKBOARD
IC	INTERCOM OUTLET
S	SPEAKER
S	SPEAKER - WALL MOUNTED
MIC	MICROPHONE
VC	VOLUME CONTROL
	SINGLE FACE CLOCK - CEILING MOUNTED
	SINGLE FACE CLOCK - WALL MOUNTED (MOUNT 7'6" A.F.F. TO CENTER)
	DOUBLE FACE CLOCK - CEILING MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED
	DOUBLE FACE CLOCK - WALL MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED
F	MANUAL FIRE ALARM BOX
SD	SMOKE DETECTOR
DD	DUCT SMOKE DETECTOR
RT	REMOTE TEST STATION (FOR DUCT DETECTOR)
TD	THERMAL DETECTOR
BD	PROJECTED BEAM DETECTOR
F	FIRE ALARM BELL
F	FIRE ALARM LOUDSPEAKER/ HORN
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE "XX" INDICATES CANDELA RATING
F XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE "XX" INDICATES CANDELA RATING
F XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE NOTIFICATION APPLIANCE- CEILING MOUNTED "XX" INDICATES CANDELA RATING
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED "XX" INDICATES CANDELA RATING
F	FIREFIGHTERS PHONE JACK

SYMBOL	DESCRIPTION
IM	ADDRESSABLE MOTORING MODULE
CM	ADDRESSABLE CONTROL MODULE
TS	TAMPER SWITCH
FS	FLOW SWITCH
DR	MAGNETIC DOOR RELEASE
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR PANEL
	SECURITY CAMERA
MD	MOTION DETECTOR
K	SECURITY KEY SWITCH
DC	DOOR CONTACT
CR	ACCESS CONTROL STATION
N 1	PATIENT BED STATION
N 11	DUAL PATIENT BED STATION
N 2	STA.F.F. STATION
N 3	DUTY STATION
N E	EMERGENCY NURSE CALL STATION
N M	MASTER STATION
N CB	CODE BLUE EMERGENCY STATION
I	NURSE CALL INTERCOM STATION
	DOME LIGHT/WALL MOUNTED
	DOME LIGHT/CEILING MOUNTED
	CIRCUIT BREAKER
	DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED
	DRAWOUT CIRCUIT BREAKER ELECTRICALLY/ OPERATED
	SWITCH
	AUTOMATIC OR MANUAL TRANSFER SWITCH
	FUSE
	TRANSFORMER
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	LIGHTNING ARRESTER
	PANELBOARD
	GROUND
	STRESS CONE TERMINATION
K	SECURITY KEY INTERLOCK
G	ENGINE GENERATOR
M	UTILITY METER
EMU	ELECTRONIC METERING UNIT
A	AMMETER
V	VOLTMETER
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
CR	CONTROL RELAY
TDR	TIME DELAY RELAY
	THERMAL OVERLOAD RELAY
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
	N.O. PUSH BUTTON SINGLE CIRCUIT
	N.C. PUSH BUTTON SINGLE CIRCUIT
X-X	CABLE VAULT "X-X" INDICATES TYPE
GB	GROUND BUS
TGB	TELECOMMUNICATION GROUNDING BUS BAR
TMGB	TELECOMMUNICATION MAIN GROUNDING BUS BAR
PB	PLUG IN BUSWAY
FB	FEEDER BUSWAY
"X"	MULTI-SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET "X" INDICATES TYPE

ELECTRICAL DRAWING INDEX

SHEET NO.	SHEET TITLE
EG1	ELECTRICAL STANDARDS AND DRAWING INDEX
EG2	ELECTRICAL STANDARD SCHEDULES
EC0.0	BASEMENT LEVEL COMPOSITE ELECTRICAL DEMOLITION PLAN
EC0.1	FIRST LEVEL COMPOSITE ELECTRICAL DEMOLITION PLAN
EC0.2	SECOND LEVEL COMPOSITE ELECTRICAL DEMOLITION PLAN
EC0.3	THIRD LEVEL COMPOSITE ELECTRICAL DEMOLITION PLAN
E1.0	POWER AND AUXILIARY SYSTEM NOTES
E1.0A	BASEMENT LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'
E1.0B	BASEMENT LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'B'
E1.0F	BASEMENT LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'F'
E1.1A	FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'
E1.1B	FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'B'
E1.1C	FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'C'
E1.1D	FIRST LEVEL POWER, AUXILIARY SYSTEMS AND LIGHTING PLAN - ZONE 'D'
E1.1E	FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'E'
E1.1F	FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'F'
E1.2A	SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'
E1.2B	SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'B'
E1.2D	SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'D'
E1.2F	SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'F'
E1.3A	THIRD LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'
E1.3B	THIRD LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'B'
E2.1A	FIRST LEVEL LIGHTING PLAN - ZONE 'A'
E2.2A	SECOND LEVEL LIGHTING PLAN - ZONE 'A'
E2.3A	THIRD LEVEL LIGHTING PLAN - ZONE 'A'
E4.1	ENLARGED ELECTRICAL PLAN
E5.1	ONE LINE DIAGRAM
E5.2	ELECTRICAL DETAILS
E5.3	ELECTRICAL DETAILS

STANDARD MOUNTING HEIGHTS

CONVENIENCE AND SPECIAL PURPOSE RECEPTACLE OUTLETS AND TELECOMMUNICATION OUTLETS.	18" A.F.F. TO CENTER OF BOX, U.O.N.
CONVENIENCE AND SPECIAL PURPOSE RECEPTACLE OUTLETS AND TELECOMMUNICATION OUTLETS IN CMU WALLS.	24" A.F.F. TO TOP OF BOX, U.O.N.
LIGHT SWITCHES, MOTOR CONTROL DEVICES AND MANUAL FIRE ALARM BOXES.	48" A.F.F. TO CENTER OF BOX, U.O.N.
LIGHT SWITCHES, MOTOR CONTROL DEVICES AND MANUAL FIRE ALARM BOXES IN CMU WALLS.	48" A.F.F. TO TOP OF BOX, U.O.N.
FIRE ALARM HORNS, SPEAKERS, STROBES AND COMBINATION DEVICES.	96" A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LESS, U.O.N.
GFI RECEPTACLES IN TOILET ROOMS AND JANITOR CLOSETS.	48" A.F.F. TO CENTER OF BOX, U.O.N.
BRANCH CIRCUIT PANELBOARDS AND LIGHTING CONTROLLERS.	6'-6" A.F.F. TO TOP OF ENCLOSURE, U.O.N.

NOTE: ALL SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Electrical Standards and Drawing Index

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN TLC

CHECKED MJW

APPROVED KCR

PROJECT NO.

CP03111

TMP PROJECT NO. 03118

SHEET NO.

EG1

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FLOOR DEVICE SCHEDULE

TYPE	DESCRIPTION ◇2	MANUFACTURER (SEE NOTE #2)	DEVICE CONFIGURATION	FLANGE/COVER MATERIAL	COVER PLATE TYPE	MINIMUM DEPTH	MAXIMUM CONDUIT
FBS	MULTI SERVICE LARGE (14 5/16"x12 1/8") CAST IRON RECESSED FLOOR BOX (9 DEVICES)	WIREMOLD RFB9	SEE NOTE 1	A	R	3"	1 1/4"

NOTES:

1. PROVIDE ONE SINGLE GANG FACEPLATE WITH 3/8" DIAMETER HOLE FOR COAXIAL CABLE, ONE DUPLEX RECEPTACLE FOR CAT. 5E CONNECTOR ◇2 AND TWO DUPLEX RECEPTACLE FOR POWER.
2. OTHER ACCEPTABLE MANUFACTURERS ARE STEEL CITY, OR HUBBELL-RACO.
3. THE PRODUCT IN THIS SCHEDULE SHALL MEET AND EXCEED THE UL SCRUB WATER EXCLUSION REQUIREMENT.

◇2 PF = PARTITION FEED
D = DUPLEX RECEPTACLE
T = 2 TELECOM OPENINGS

GY = GRAY
BK = BLACK
VY = IVORY
BS = BRASS
B = BRONZE
A = ALUMINUM
P = PLASTIC (BLACK OR BROWN)

S = SCREW
FD = FLIP LID/DUPLEX
FR = FLIP LID/RECTANGULAR
SL = SLIDES
C = CARPET/TILE INSERTS
F = FLIP COVER
R = RUBBER FLOOR

OCCUPANCY SENSOR LEGEND

TYPE	DESCRIPTION
OS D	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR
So	WALL SWITCH PASSIVE INFRARED OCCUPANCY SENSOR

MOTOR CIRCUIT SIZING SCHEDULE (480V, 3 PHASE)

MOTOR HP	SWITCH/FUSE	CIRCUIT BREAKER	STARTER SIZE/TYPE	MOTOR DISCONNECT (NOTE 3)
1/2	30/3A.	15A.	1	30A.
3/4	30/3A.	15A.	1	30A.
1	30/6A.	15A.	1	30A.
1 1/2	30/6A.	15A.	1	30A.
2	30/6A.	15A.	1	30A.
3	30/10A.	15A.	1	30A.
5	30/15A.	15A.	1	30A.
7 1/2	30/20A.	20A.	1	30A.
10	30/20A.	25A.	1	30A.
15	30/30A.	40A.	2	30A.
20	60/40A.	60A.	2	60A.
25	60/50A.	70A.	2	60A.
30	60/60A.	80A.	3	60A.
40	100/80A.	90A.	3	100A.
50	100/100A.	100A.	3	100A.
60	200/125A.	125A.	4	200A.
75	200/150A.	150A.	4	200A.
100	200/200A.	200A.	4	200A.
125	200/200A.	225A.	5	200A.
150	400/250A.	250A.	5	400A.
200	400/350A.	350A.	5	400A.

NOTES:

1. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE N.E.C.
2. BASED ON MOTOR RUNNING OVERLOAD PROTECTIONS PROVIDED BY THERMAL OVERLOAD RELAYS.
3. WHERE THE STARTER IS LOCATED REMOTE FROM THE MOTOR, PROVIDE DISCONNECT LOCATED AT THE MOTOR, SIZE AS INDICATED.

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE

VOLTAGE	AMPERAGE	MAXIMUM BRANCH CIRCUIT 100FT	150FT	200FT	250FT	300FT
120	20A	#12 AWG	#10 AWG	#10 AWG	#8 AWG	#8 AWG
277	20A	#12 AWG	#12 AWG	#12 AWG	#10 AWG	#10 AWG
120	30A	#10 AWG	#8 AWG	#8 AWG	#6 AWG	#6 AWG
277	30A	#10 AWG	#10 AWG	#10 AWG	#10 AWG	#10 AWG

NOTE:

1. PROVIDE CONDUCTOR SIZES PER TABLE ABOVE. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 3 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT AND SERVED BY A 20 OR 30 AMP BRANCH CIRCUIT BREAKER. CONDUCTOR SIZES SHOWN ARE FOR MAXIMUM 3 PERCENT VOLTAGE DROP.

SPECIAL RECEPTACLES

TYPE	DESCRIPTION
◇1	125V, 30A, SINGLE PHASE, TWIST-LOCK RECEPTACLE 2 POLE, 3 WIRE (NEMA L5-30R)
◇2	250V, 20A, SINGLE PHASE, TWIST-LOCK RECEPTACLE 2 POLE, 3 WIRE (NEMA L6-20R)
◇3	250V, 30A, SINGLE PHASE, TWIST-LOCK RECEPTACLE, 2 POLE, 3 WIRE (NEMA L6-30R)
◇4	250V, 20A, THREE PHASE, TWIST-LOCK RECEPTACLE 3 POLE, 4 WIRE (NEMA L15-20R)
◇5	250V, 30A, THREE PHASE, TWIST-LOCK RECEPTACLE, 3 POLE, 4 WIRE (NEMA L15-30R)
◇6	208Y/120V, 30A, THREE PHASE, TWIST-LOCK RECEPTACLE 4 POLE, 5 WIRE (NEMA L21-30A)
◇7	125/ 250V SINGLE PHASE RECEPTACLE 3 POLE, 4 WIRE (NEMA 14-30R)
◇8	125/ 250V SINGLE PHASE RECEPTACLE 3 POLE, 4 WIRE (NEMA 14-50R)
◇9	VERIFY IN FIELD

NOTE: ALL SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE

OVERCURRENT DEVICE RATING (AMPERES)	WIRE SIZE (AWG OR KCMIL) PHASE & NEUTRAL	GROUND NOTE 4	CONDUIT SIZE S SINGLE PHASE 2 WIRE+G	* * THREE WIRE 3 WIRE+G	N NEUTRAL 4 WIRE+G (3PH & 1N)	T TRANSFORMER SECONDARY 4 WIRE+G	IG ISOLATED GROUND 4 WIRE+2G
15-20	12	12	3/4"	3/4"	3/4"	3/4"	3/4"
25-30	10	10	3/4"	3/4"	3/4"	3/4"	3/4"
35-40	8	10	3/4"	3/4"	3/4"	3/4"	3/4"
45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"	3/4"
60	6 (4)	10	3/4" (1)	3/4" (1)	3/4" (1)	3/4" (1)	1"
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/2"
110	2 (1)	6	1 1/4"	1 1/4"	1 1/4" (1 1/2")	1 1/4" (1 1/2")	2"
125	1 (1/0)	6	1 1/4"	1 1/4" (1 1/2")	1 1/2"	1 1/2"	2"
150	1/0	6	1 1/4"	1 1/2"	1 1/2"	1 1/2"	2"
175	2/0	6	1 1/2"	2"	2"	2"	2"
200	3/0	6	1 1/2"	2"	2 1/2"	2 1/2"	2 1/2"
225	4/0	4	2"	2"	2 1/2"	2 1/2"	2 1/2"
250	250	4	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
300	350	4	2 1/2"	2 1/2"	3"	3"	3"
350	500	3	3"	3"	3"	3"	3"
400	500	3	3"	3"	3"	3"	3"
450	2-4/0	2-2	2-2"	2-2"	2-2 1/2"	2-2 1/2"	2-2 1/2"
500	2-250	2-2	2-2"	2-2 1/2"	2-2 1/2"	2-2 1/2"	2-2 1/2"
600	2-350	2-1	2-2 1/2"	2-2 1/2"	2-3"	2-3"	2-3"
700	2-500	2-1/0	2-3"	2-3"	3"	3"	2-3 1/2"
800	2-600	2-1/0	2-3"	2-3"	2-3 1/2"	2-3 1/2"	2-4"
1000	3-400	3-2/0	3-2 1/2"	3-3"	3-3"	3-3"	3-3"
1200	3-600	3-3/0	3-3"	3-3 1/2"	3-3 1/2"	3-3 1/2"	3-4"
1600	4-600	4-4/0	4-3"	4-3 1/2"	4-3 1/2"	4-3 1/2"	4-4"
2000	5-600	5-250	5-3"	5-3 1/2"	5-3 1/2"	5-3 1/2"	5-4"
3000	–	–	–	–	–	–	–
4000	–	–	–	–	–	–	–

NOTES:

1. CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.
2. CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.
3. CONDUCTORS ARE BASED ON THHN/THWN UP TO AND INCLUDING #4/0. LARGER THAN #4/0 ARE BASED ON TYPE XHHW.
4. CONDUCTORS ARE BASED ON 90°C, 600V. INSULATED COPPER WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C. USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.
5. CONDUIT SIZES ARE VALID FOR EMT OR RGS. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

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PBA Project No. 203325

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Electrical Standard Schedules

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN TLC
CHECKED MJW
APPROVED KCR

PROJECT NO.

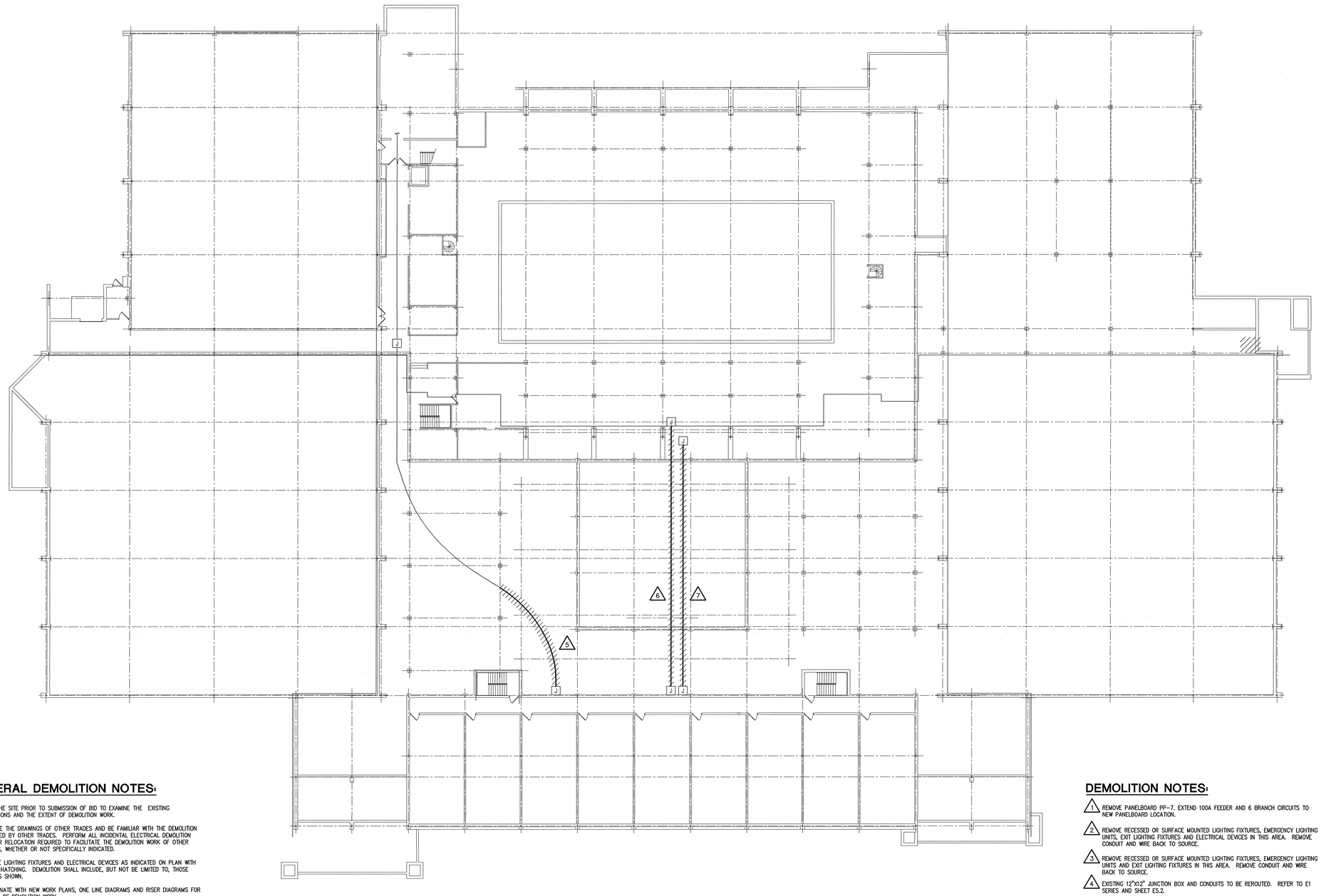
CP03111

TMP PROJECT NO. 03118

SHEET NO.

EG2

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TRUE NORTH

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BASEMENT LEVEL COMPOSITE ELECTRICAL DEMOLITION PLAN

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

0 2 8 16

GENERAL DEMOLITION NOTES:

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE DEVICES SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
6. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES AND DEVICES THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES THAT ARE TO REMAIN.
7. DISPOSE OF ALL MATERIALS OFF SITE UNLESS OTHERWISE NOTED AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
8. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
9. CONTRACTOR SHALL RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
10. CONTRACTOR SHALL PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
11. CONTRACTOR SHALL VERIFY ALL UNDERGROUND AND IN SLAB UTILITY. LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB
12. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE CONSTRUCTION MANAGER. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER ONE WEEK PRIOR TO SHUT DOWN.

DEMOLITION NOTES:

1. REMOVE PANELBOARD PP-7. EXTEND 100A FEEDER AND 6 BRANCH CIRCUITS TO NEW PANELBOARD LOCATION.
2. REMOVE RECESSED OR SURFACE MOUNTED LIGHTING FIXTURES, EMERGENCY LIGHTING UNITS, EXIT LIGHTING FIXTURES AND ELECTRICAL DEVICES IN THIS AREA. REMOVE CONDUIT AND WIRE BACK TO SOURCE.
3. REMOVE RECESSED OR SURFACE MOUNTED LIGHTING FIXTURES, EMERGENCY LIGHTING UNITS AND EXIT LIGHTING FIXTURES IN THIS AREA. REMOVE CONDUIT AND WIRE BACK TO SOURCE.
4. EXISTING 12"X12" JUNCTION BOX AND CONDUITS TO BE REROUTED. REFER TO E1 SERIES AND SHEET E5.2.
5. REMOVE EXISTING 3-2"C. AND 1-2 1/2"C. ROUTED IN FIRST LEVEL SLAB AND ASSOCIATED FEEDERS FROM SUBSTATION TO PANELBOARDS LP-H, J, K AND L. PROVIDE TEMPORARY FEEDERS TO PANELBOARDS DURING CONSTRUCTION. REFER TO E1 SERIES FOR NEW WORK.
6. REMOVE EXISTING 2"C. ROUTED IN FIRST LEVEL SLAB AND ASSOCIATED FEEDER FROM SUBSTATION TO PANELBOARD TYP.
7. REMOVE EXISTING 1-1"C., AND 1-2"C. ROUTED IN FIRST FLOOR SLAB. REFER TO E1 SERIES FOR NEW WORK.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

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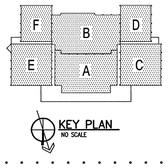
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Basement Level Composite Electrical Demolition Plan



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

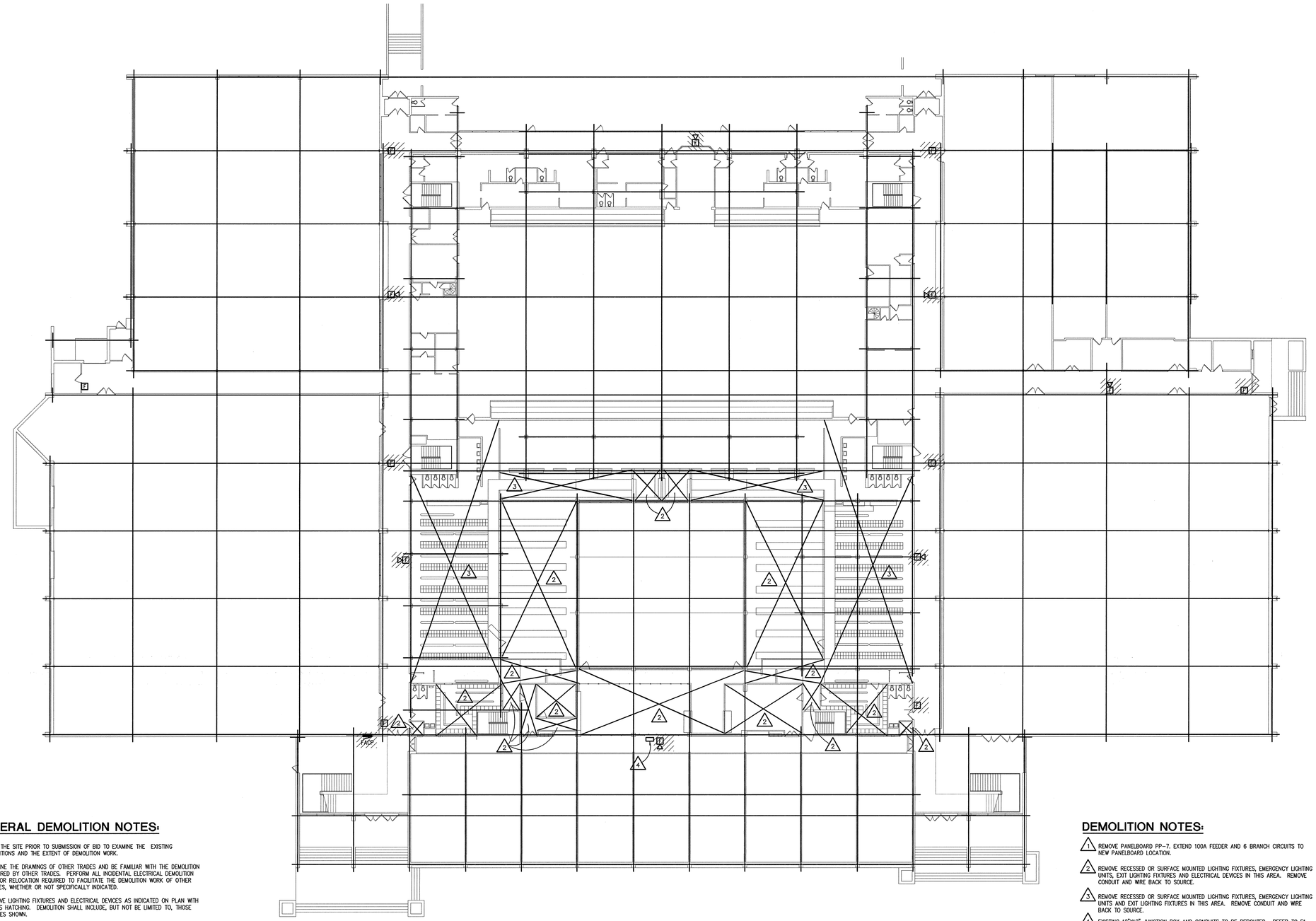
CP03111

TMP PROJECT NO. 03118

SHEET NO.

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TRUE NORTH

FIRST LEVEL COMPOSITE ELECTRICAL DEMOLITION PLAN

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

0 2 8 16

GENERAL DEMOLITION NOTES:

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE DEVICES SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
6. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES AND DEVICES THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES THAT ARE TO REMAIN.
7. DISPOSE OF ALL MATERIALS OFF SITE UNLESS OTHERWISE NOTED AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
8. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
9. CONTRACTOR SHALL RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
10. CONTRACTOR SHALL PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
11. CONTRACTOR SHALL VERIFY ALL UNDERGROUND AND IN SLAB UTILITY. LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB
12. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE CONSTRUCTION MANAGER. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER ONE WEEK PRIOR TO SHUT DOWN.

DEMOLITION NOTES:

1. REMOVE PANELBOARD PP-7, EXTEND 100A FEEDER AND 6 BRANCH CIRCUITS TO NEW PANELBOARD LOCATION.
2. REMOVE RECESSED OR SURFACE MOUNTED LIGHTING FIXTURES, EMERGENCY LIGHTING UNITS, EXIT LIGHTING FIXTURES AND ELECTRICAL DEVICES IN THIS AREA. REMOVE CONDUIT AND WIRE BACK TO SOURCE.
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4. EXISTING 12"X12" JUNCTION BOX AND CONDUITS TO BE REROUTED. REFER TO E1 SERIES AND SHEET E5.2.
5. REMOVE EXISTING 3-2"C. AND 1-2 1/2"C. ROUTED IN FIRST LEVEL SLAB AND ASSOCIATED FEEDERS FROM SUBSTATION TO PANELBOARDS LP-H, J, K AND L. PROVIDE TEMPORARY FEEDERS TO PANELBOARDS DURING CONSTRUCTION. REFER TO E1 SERIES FOR NEW WORK.
6. REMOVE EXISTING 2"C. ROUTED IN FIRST LEVEL SLAB AND ASSOCIATED FEEDER FROM SUBSTATION TO PANELBOARD TYP.
7. REMOVE EXISTING 1-1"C. AND 1-2"C. ROUTED IN FIRST FLOOR SLAB. REFER TO E1 SERIES FOR NEW WORK.

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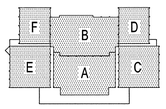
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level Composite Electrical Demolition Plan



KEY PLAN
NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

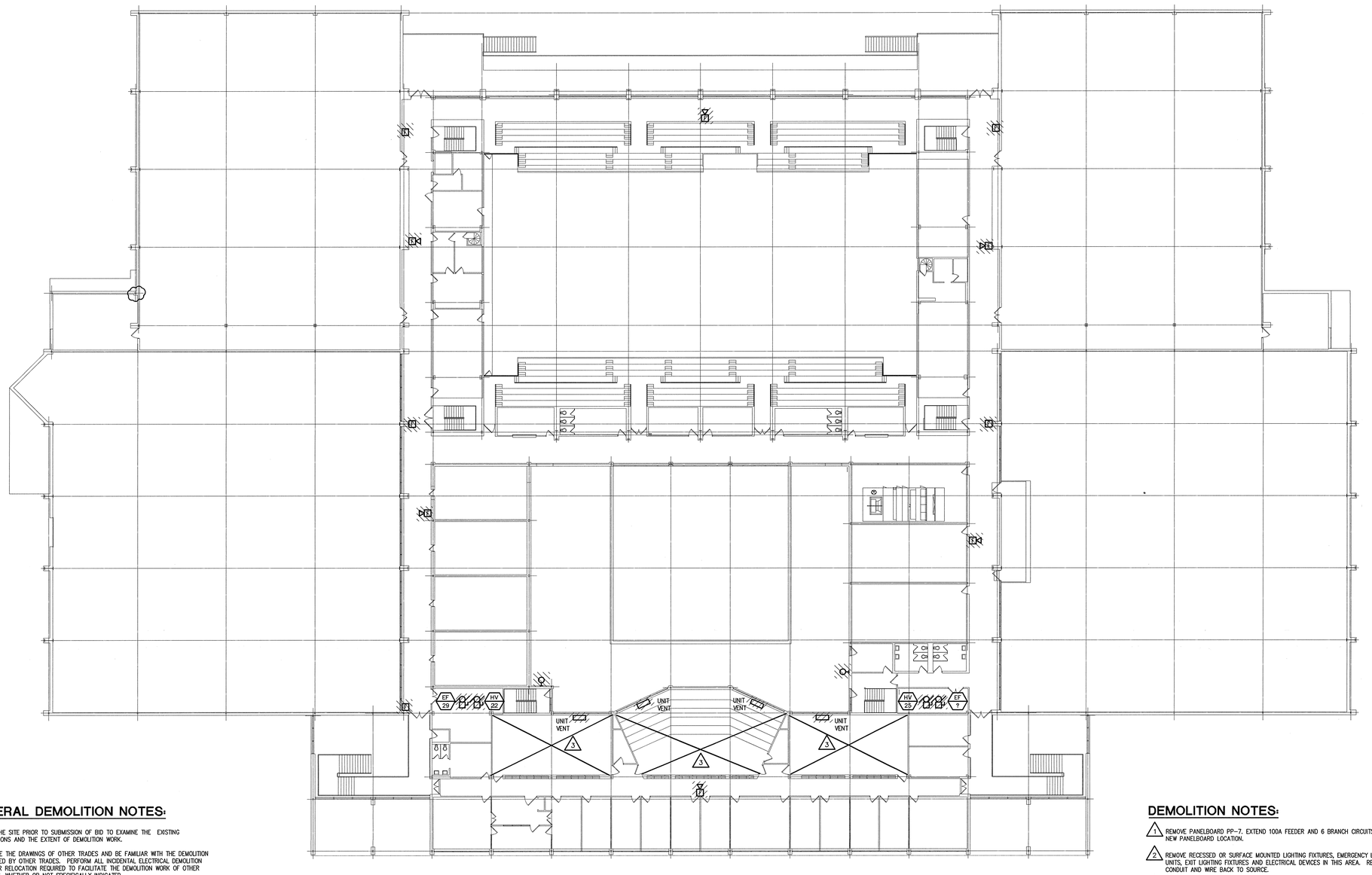
CP03111

TMP PROJECT NO. 03118

SHEET NO.

EC0.1

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TRUE NORTH

SECOND LEVEL COMPOSITE ELECTRICAL DEMOLITION PLAN

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

0 2 8 16

GENERAL DEMOLITION NOTES:

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE DEVICES SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
6. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES AND DEVICES THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES THAT ARE TO REMAIN.
7. DISPOSE OF ALL MATERIALS OFF SITE UNLESS OTHERWISE NOTED AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
8. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
9. CONTRACTOR SHALL RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
10. CONTRACTOR SHALL PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
11. CONTRACTOR SHALL VERIFY ALL UNDERGROUND AND IN SLAB UTILITY. LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB
12. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE CONSTRUCTION MANAGER. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER ONE WEEK PRIOR TO SHUT DOWN.

DEMOLITION NOTES:

1. REMOVE PANELBOARD PP-7. EXTEND 100A FEEDER AND 6 BRANCH CIRCUITS TO NEW PANELBOARD LOCATION.
2. REMOVE RECESSED OR SURFACE MOUNTED LIGHTING FIXTURES, EMERGENCY LIGHTING UNITS, EXIT LIGHTING FIXTURES AND ELECTRICAL DEVICES IN THIS AREA. REMOVE CONDUIT AND WIRE BACK TO SOURCE.
3. REMOVE RECESSED OR SURFACE MOUNTED LIGHTING FIXTURES, EMERGENCY LIGHTING UNITS AND EXIT LIGHTING FIXTURES IN THIS AREA. REMOVE CONDUIT AND WIRE BACK TO SOURCE.
4. EXISTING 12"X12" JUNCTION BOX AND CONDUITS TO BE REROUTED. REFER TO E1 SERIES AND SHEET E5.2.
5. REMOVE EXISTING 3-2"C. AND 1-2 1/2"C. ROUTED IN FIRST LEVEL SLAB AND ASSOCIATED FEEDERS FROM SUBSTATION TO PANELBOARDS LP-H, J, K AND L. PROVIDE TEMPORARY FEEDERS TO PANELBOARDS DURING CONSTRUCTION. REFER TO E1 SERIES FOR NEW WORK.
6. REMOVE EXISTING 2"C. ROUTED IN FIRST LEVEL SLAB AND ASSOCIATED FEEDER FROM SUBSTATION TO PANELBOARD TVP.
7. REMOVE EXISTING 1-1"C., AND 1-2"C. ROUTED IN FIRST FLOOR SLAB. REFER TO E1 SERIES FOR NEW WORK.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

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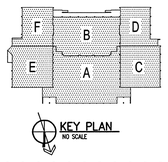
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Second Level Composite Electrical Demolition Plan



KEY PLAN
NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

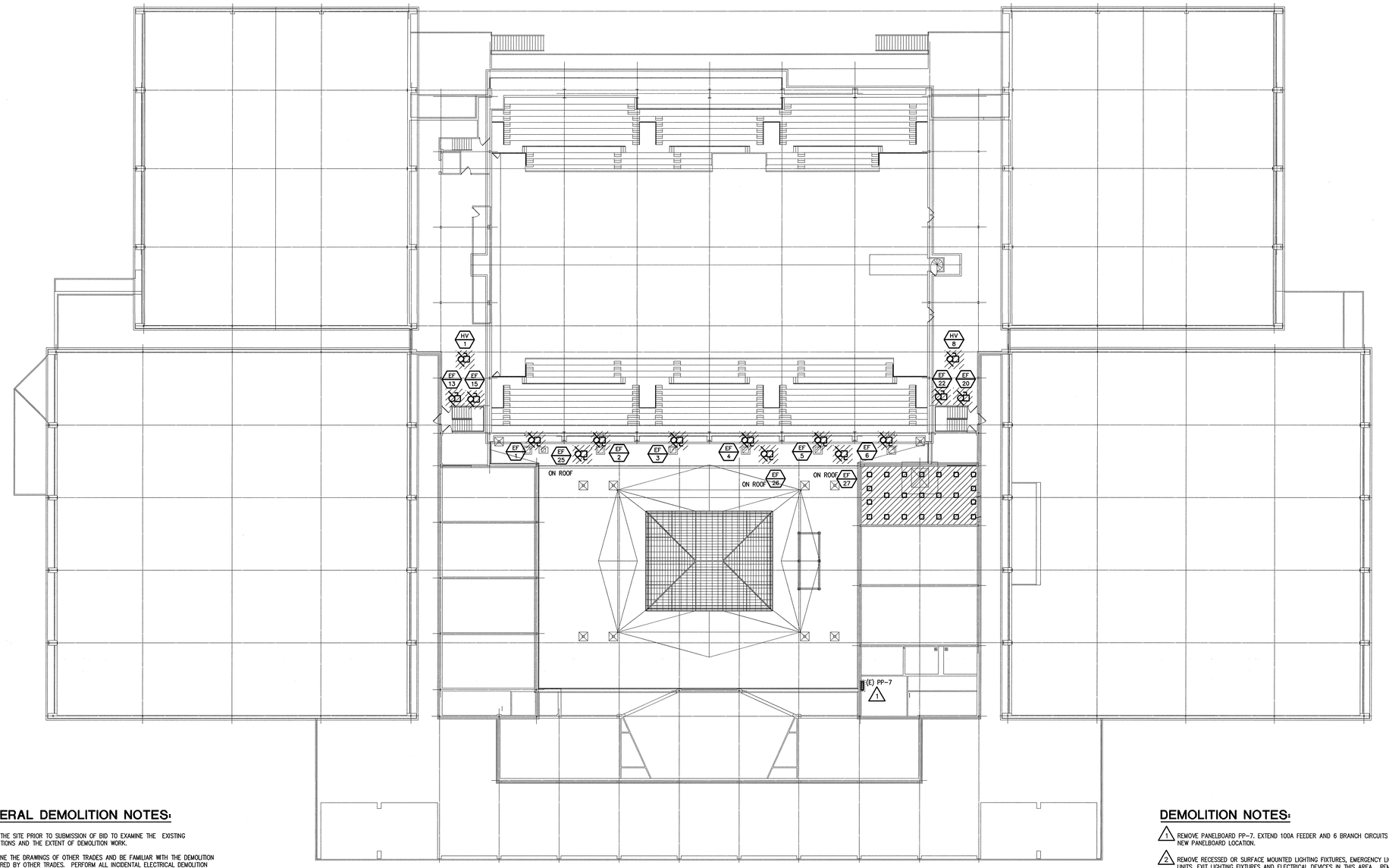
CP03111

TMP PROJECT NO. 03118

SHEET NO.

EC0.2

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TRUE NORTH

THIRD LEVEL COMPOSITE ELECTRICAL DEMOLITION PLAN

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

0 2 8 16

GENERAL DEMOLITION NOTES:

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE DEVICES SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
6. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES AND DEVICES THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES THAT ARE TO REMAIN.
7. DISPOSE OF ALL MATERIALS OFF SITE UNLESS OTHERWISE NOTED AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
8. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
9. CONTRACTOR SHALL RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
10. CONTRACTOR SHALL PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
11. CONTRACTOR SHALL VERIFY ALL UNDERGROUND AND IN SLAB UTILITY. LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB
12. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE CONSTRUCTION MANAGER. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER ONE WEEK PRIOR TO SHUT DOWN.

DEMOLITION NOTES:

1. REMOVE PANELBOARD PP-7. EXTEND 100A FEEDER AND 6 BRANCH CIRCUITS TO NEW PANELBOARD LOCATION.
2. REMOVE RECESSED OR SURFACE MOUNTED LIGHTING FIXTURES, EMERGENCY LIGHTING UNITS, EXIT LIGHTING FIXTURES AND ELECTRICAL DEVICES IN THIS AREA. REMOVE CONDUIT AND WIRE BACK TO SOURCE.
3. REMOVE RECESSED OR SURFACE MOUNTED LIGHTING FIXTURES, EMERGENCY LIGHTING UNITS AND EXIT LIGHTING FIXTURES IN THIS AREA. REMOVE CONDUIT AND WIRE BACK TO SOURCE.
4. EXISTING 12"X12" JUNCTION BOX AND CONDUITS TO BE REROUTED. REFER TO E1 SERIES AND SHEET E5.2.
5. REMOVE EXISTING 3-2"C. AND 1-2 1/2"C. ROUTED IN FIRST LEVEL SLAB AND ASSOCIATED FEEDERS FROM SUBSTATION TO PANELBOARDS LP-H, J, K AND L. PROVIDE TEMPORARY FEEDERS TO PANELBOARDS DURING CONSTRUCTION. REFER TO E1 SERIES FOR NEW WORK.
6. REMOVE EXISTING 2"C. ROUTED IN FIRST LEVEL SLAB AND ASSOCIATED FEEDER FROM SUBSTATION TO PANELBOARD TYP.
7. REMOVE EXISTING 1-1"C., AND 1-2"C. ROUTED IN FIRST FLOOR SLAB. REFER TO E1 SERIES FOR NEW WORK.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

SHEET: OF:

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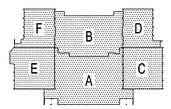
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Third Level Composite Electrical Demolition Plan



KEY PLAN
NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

CP03111

TMP PROJECT NO. 03118

SHEET NO.

EC0.3

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GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL PULL BOXES, JUNCTION BOXES AND INCIDENTAL MATERIALS AND LABOR FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM.
2. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY CONSTRUCTION MANAGER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS.
3. ALL CIRCUIT NUMBERS SHOWN ARE FROM LP PANELBOARDS UNLESS NOTED OTHERWISE.
4. COORDINATE THE MOUNTING HEIGHTS OF OUTLETS ABOVE COUNTER TOP, SINKS, ETC. WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
5. COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
6. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL CORD AND CAP FOR GARBAGE DISPOSALS.
7. FIRE ALARM VISUAL NOTIFICATION APPLIANCES ARE LOCATED TO PROVIDE COVERAGE PER NFPA 72. IF FOR ANY REASON, VISUAL DEVICES MUST BE LOCATED DIFFERENTLY, ADJUST CANDELA RATING APPROPRIATELY TO MEET NFPA 72 REQUIREMENTS.
8. ALL DUCT SMOKE DETECTORS SHALL BE INSTALLED WITH AN UNOBSTRUCTED VIEW. PROVIDE REMOTE STATUS INDICATORS FOR ALL DUCT DETECTORS THAT ARE ABOVE 10'-0" OR OBSTRUCTED FROM VIEW. COORDINATE EXACT LOCATIONS WITH MICHIGAN STATE UNIVERSITY, THROUGH THE CONSTRUCTION MANAGER.
9. ELECTRICAL CONTRACTOR SHALL DERATE CONDUCTORS AS REQUIRED BY THE N.E.C. WHEN GROUPED IN COMMON RACEWAYS.
10. PROVIDE FIRESTOPPING ON CONDUITS PASSING THROUGH FIRE RATED WALLS AND FLOORS. COORDINATE LOCATION AND RATINGS OF WALLS WITH ARCHITECTURAL DRAWINGS.
11. PROVIDE ALL MISCELLANEOUS STEEL AS REQUIRED FOR THE PROPER INSTALLATION OF ELECTRICAL EQUIPMENT AND SYSTEMS, INCLUDING BUT NOT LIMITED TO SUPPORTS, ANCHORS AND GUIDES. SUBMIT PROPOSED METHODS FOR SUPPORTING ELECTRICAL SYSTEMS AND EQUIPMENT TO THE STRUCTURAL ENGINEER FOR APPROVAL
12. PROVIDE ACCESS DOORS IN EXISTING NON ACCESSIBLE CEILINGS FOR INSTALLATION OF FIRE ALARM CONDUIT. PROVIDE QUANTITY OF ACCESS DOORS REQUIRED FOR PROPER SUPPORT OF FIRE ALARM CONDUIT.
13. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION AND QUANTITY OF FLOW AND TAMPER SWITCHES.

CONSTRUCTION NOTES:

1. REPLACE EXISTING 100A LIGHTING CONTACTOR WITH NEW 100A CONTACTOR RECONNECT TO LOADS BEING SERVED.
2. 5-4"C. TO MECHANICAL ROOM LOCATED ON THIRD LEVEL. REFER TO SHEET E5.1. COORDINATE EXACT ROUTING IN FIELD.
3. 1-4"C. AND 1-2"C. TO ROOM 103A LOCATED ON FIRST LEVEL. REFER TO SHEET E1.1A. COORDINATE EXACT ROUTING IN FIELD.
4. ROUTE NEW CONDUITS VERTICALLY IN EXISTING SHAFT.
5. ROUTE 2-1"C. FOR TELECOMMUNICATION FROM FLOOR DEVICE IN SLAB UP NEW WALL TO CABLE TRAY.
6. ROUTE 1"C. FOR TELECOMMUNICATION FROM SURFACE RACEWAY TO CABLE TRAY. PROVIDE 1"C. EVERY 12'-0" FOR LENGTH OF RACEWAY BEGINNING 2'-0" FROM END.
7. PROVIDE 1"C. FOR TELECOMMUNICATION FROM SURFACE RACEWAY IN SLAB DOWN TO CABLE TRAY. PROVIDE 1"C. EVERY 12'-0" FOR LENGTH OF RACEWAY BEGINNING 2'-0" FROM END.
8. REPLACE TWO EXISTING 30A LIGHTING CONTACTORS WITH NEW 30A CONTACTORS RECONNECT TO LOADS BEING SERVED.
9. REPLACE EXISTING 30A LIGHTING CONTACTOR WITH NEW 30A CONTACTOR RECONNECT TO LOADS BEING SERVED.
10. CONNECT NEW 3-2"C. AND 1-2 1/2"C. TO EXISTING CONDUITS AND JUNCTION BOX. REEFER TO SHEET E5.1 FOR NEW FEEDERS.
11. ROUTE NEW 2" CONDUIT FROM JUNCTION BOX TO ROOM 102A. CONNECT FROM JUNCTION BOX TO EXISTING CONDUIT IN FIRST FLOOR CEILING SPACE.
12. ROUTE NEW 1-1" AND 2-2"C. FROM JUNCTION BOX TO ROOM 102A. CONNECT JUNCTION BOX TO EXISTING CONDUIT IN FIRST FLOOR CEILING SPACE.
13. NEW JUNCTION BOXES IN WALL.
14. ROUTE 2"C. FROM PROJECTOR LOCATION TO EQUIPMENT CABINET. STUB CONDUIT 1" BELOW CEILING WITH BUSHING.
15. ROUTE CONDUIT DOWN WALL IN MECHANICAL ROOM. PENETRATE WALL AND TERMINATE IN BACK OF EQUIPMENT CABINET.
16. ROUTE CONDUIT DOWN NEW WALL AND TERMINATE IN BACK OF EQUIPMENT CABINET.
17. ROUTE WIREMOLD 4000 DOWN WALL BEHIND EQUIPMENT CABINET.
18. SAW CUT FLOOR FOR CONDUITS BETWEEN PODIUM AND EQUIPMENT CABINET.
19. CONNECT EXISTING LIGHT FIXTURES IN SPACE TO NEW LIGHT SWITCH INDICATED.
20. CONNECT EXISTING LIGHT FIXTURES IN SPACE TO LIGHT SWITCH CONTROLLING ADJACENT WRESTLING ROOM.
21. PROVIDE SMOKE DETECTORS TO RELEASE COILING FIRE DOOR. COILING FIRE DOOR SHALL OPERATE VIA INTERNAL FUSIBLE LINK OR FROM SMOKE DETECTOR SIGNAL. TIE TO FIRE ALARM PANEL. PROVIDE 24V POWER (FROM NEAREST FIRE ALARM SYSTEM) AS REQUIRED. COORDINATE EXACT REQUIREMENTS WITH COILING DOOR MANUFACTURE/ CONTRACTOR.
22. MOUNT DUPLEX RECEPTACLE AND TELECOMMUNICATION OUTLET TO STRUCTURE ABOVE.
23. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM CONTROL MODULES AND SMOKE DETECTORS FOR DOOR RELEASE. COORDINATE MOUNTING WITH DOOR CONTRACTOR. ALL RELATED DOOR HARDWARE IS PROVIDED BY OTHERS. WIRE TO FIRE ALARM PANEL SO THAT UPON SYSTEM ALARM, DOOR WILL CLOSE.
24. NOT USED
25. SPEAKERS TO BE FURNISHED AND INSTALLED BY OWNER. PROVIDE CONDUIT AS INDICATED.
26. PROVIDE 2"C. FROM STORAGE ROOM TO ROOM 103A.
27. PROVIDE 2-1"C. FROM CHECK-IN DESK TO CABLE TRAY.
28. PROVIDE 2-GANG RECESSED BACK BOX AND 3/4"C. UP TO CEILING FOR CONTROL OF PROJECTON SCREENS.
29. PROVIDE BLANK FACEPLATES.
30. COORDINATE LOCATION WITH OWNER AND MILLWORK.
31. CONNECT TO NEAREST AVAILABLE 120V CIRCUIT.
32. PROVIDE 3/4"C. FROM TELECOMMUNICATION OUTLET TO CEILING SPACE ABOVE CORRIDOR.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

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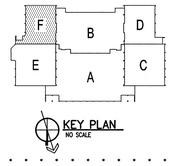
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Power and Auxiliary System Notes



KEY PLAN
NO SCALE

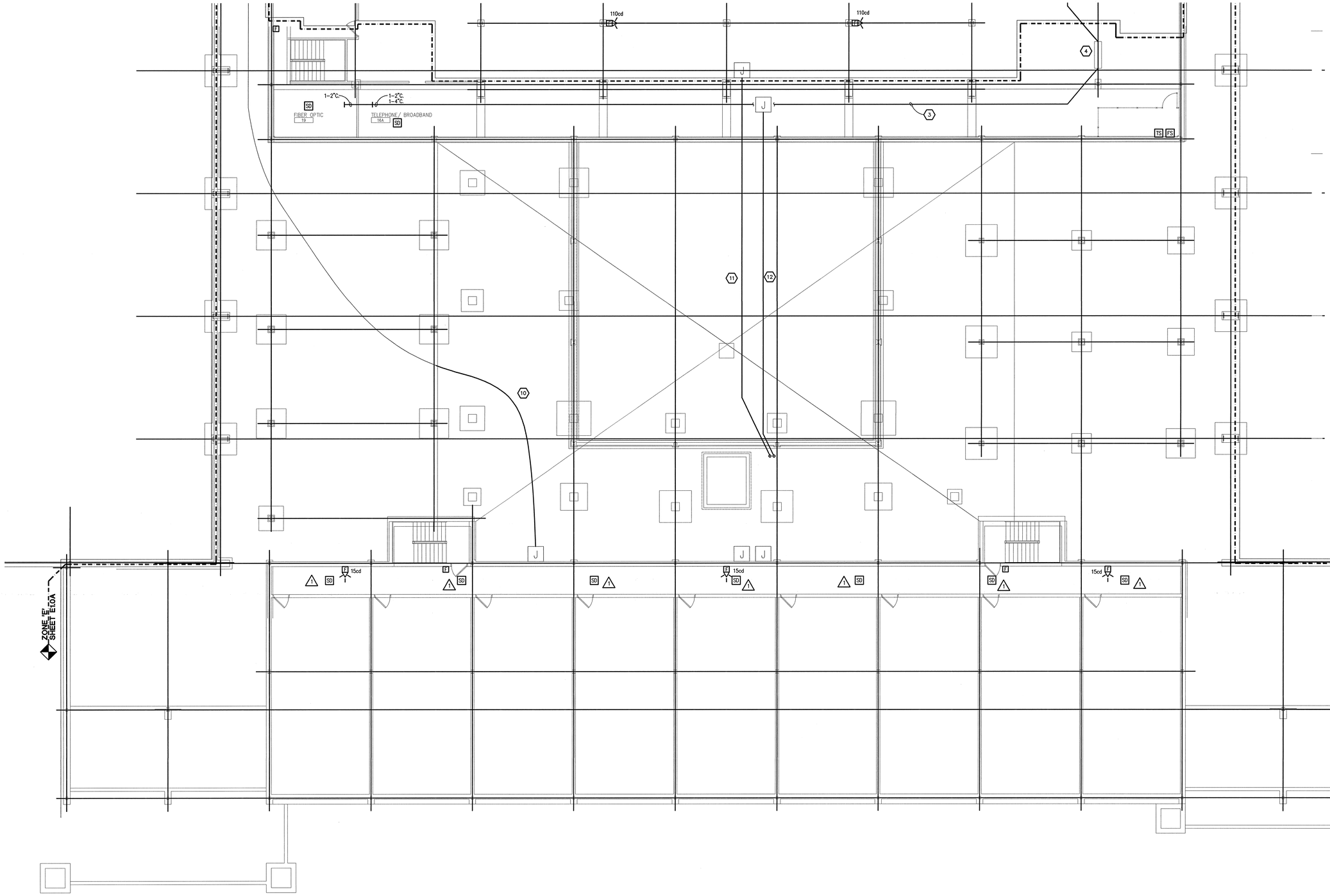
DATE:	ISSUED FOR:
9-8-06	AS-BUILT
8-23-04	BULLETIN NO. 2
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.
CP03111
TMP PROJECT NO. 03118

SHEET NO.
E1.0

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TRUE NORTH

BASEMENT LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)		SHEET: OF: DRAWN BY: APP'D BY: DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES		SCALE: AS NOTED DWG NO: B-151-76 CARD NO: CP 03111

TMP ARCHITECTURE

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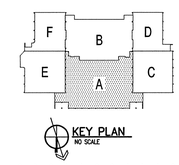
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Basement Level Power and Auxiliary Systems Plan - Zone 'A'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

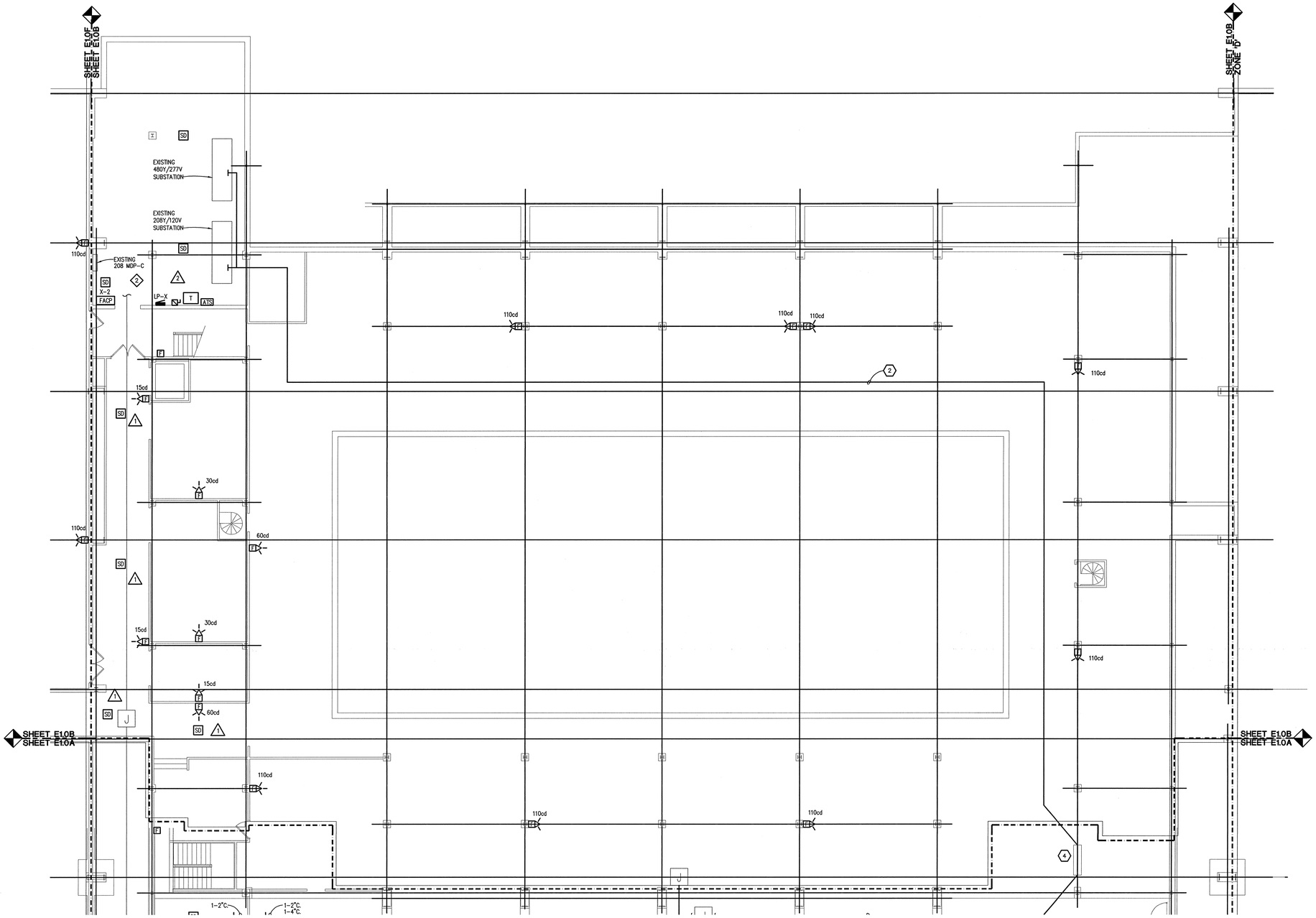
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.0A

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TRUE NORTH

BASEMENT LEVEL
POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'B'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:	SHEET: OF:
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

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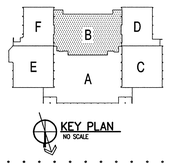
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Basement Level Power and Auxiliary Systems Plan - Zone 'B'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
8-23-04	BULLETIN NO. 2
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

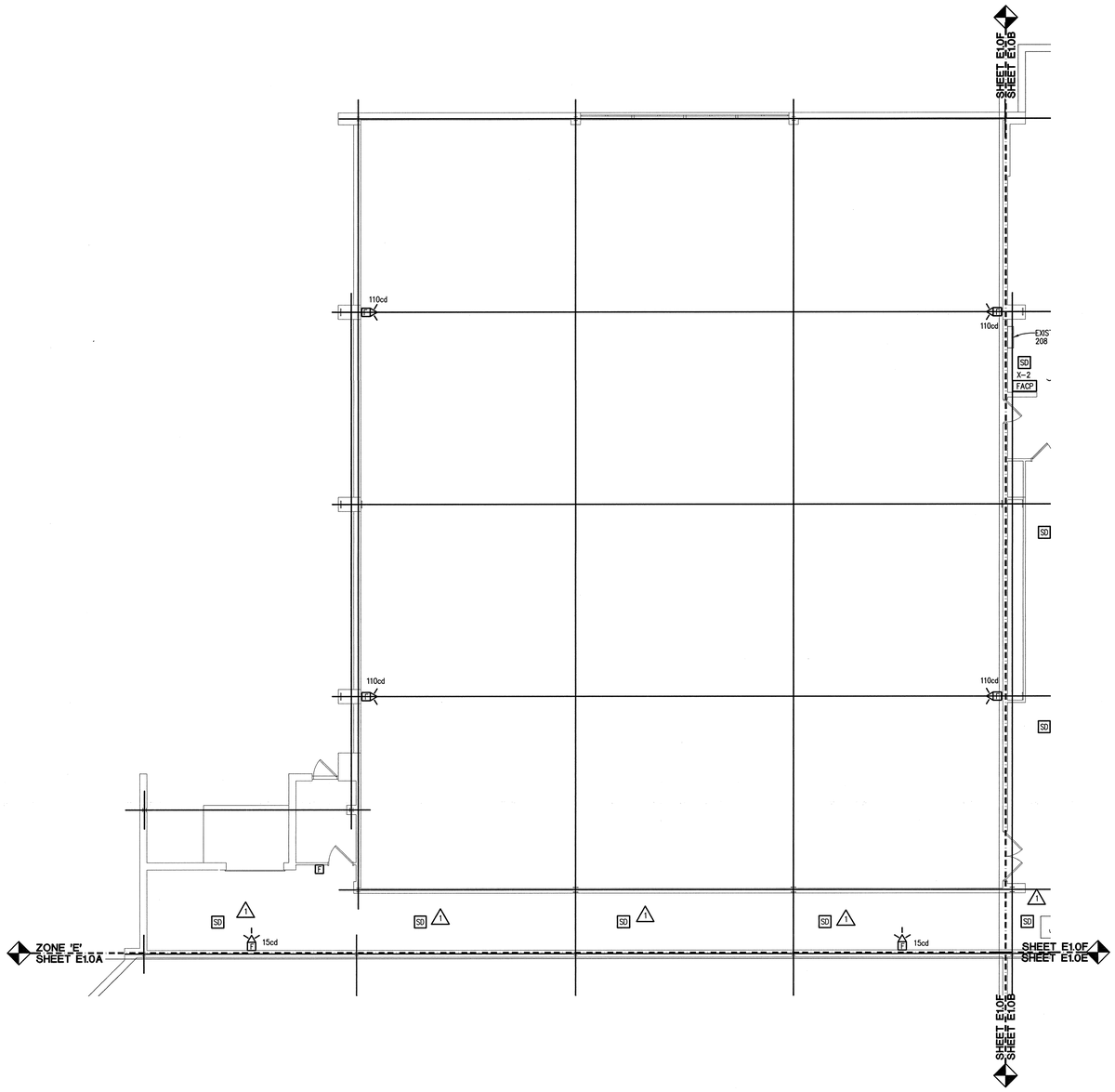
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.0B

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TRUE NORTH

N

BASEMENT LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'F'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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Peter Basso Associates Inc
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6145 Livernois, Suite 100
Troy, Michigan 48098-5076
Tel: 248-879-5666
Fax: 248-879-0007
www.pbainc.com
PBA Project No. 203205

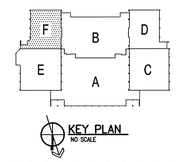
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Basement Level Power and Auxiliary Systems Plan - Zone 'F'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

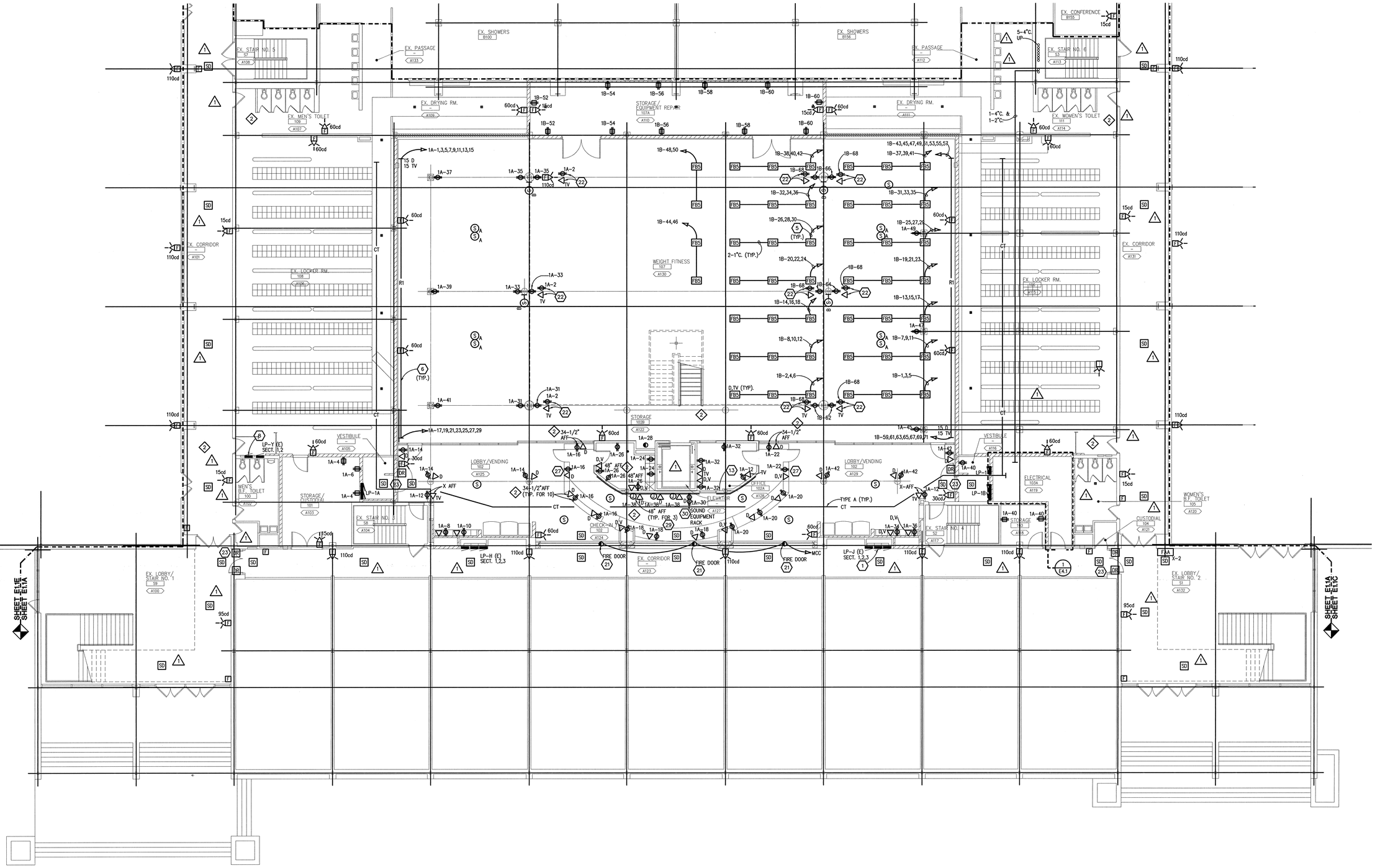
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.0F

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TRUE NORTH

FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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PBA Project No. 223025

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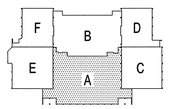
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level Power and Auxiliary Systems Plan - Zone 'A'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.1A

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TMP ARCHITECTURE

August 20, 2004

I.M. West Addition
Michigan State University
TMP Project No. 03118

TMP Reply to Barton Malow / Clark RFI No. 0017:

1. Refer to attached copies of proposed layout dimensions as submitted by BM/C. (TMP received 8/19/04.) This proposed layout is acceptable to TMP. BM/C to confirm Owner's acceptance of layout. Also field-verify and confirm that proposed layout does not conflict with columns or foundations at locations 12.1/H.4 and 12.1/J.2.

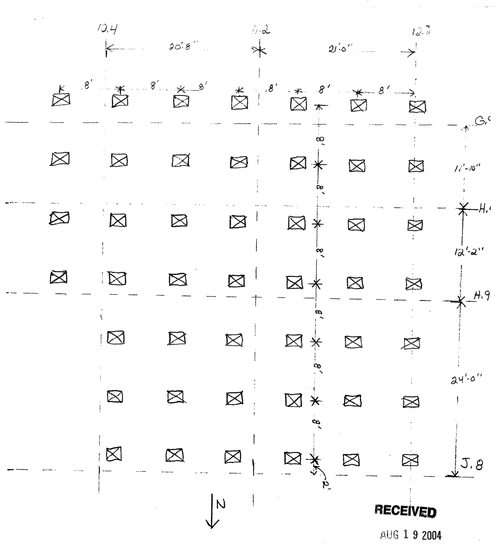
2. Orientation of floor boxes with long dimension running east-west as indicated on attached BM/C sketch is acceptable.

3. Data and power orientation is not critical. Orient data and power receptacles in the same locations in all boxes (e.g. all data on east of box).

If you have further questions, please feel free to call.

Robert J. Farley, RA, CCS
Senior Associate / Construction Services

TMP Associates, Inc.

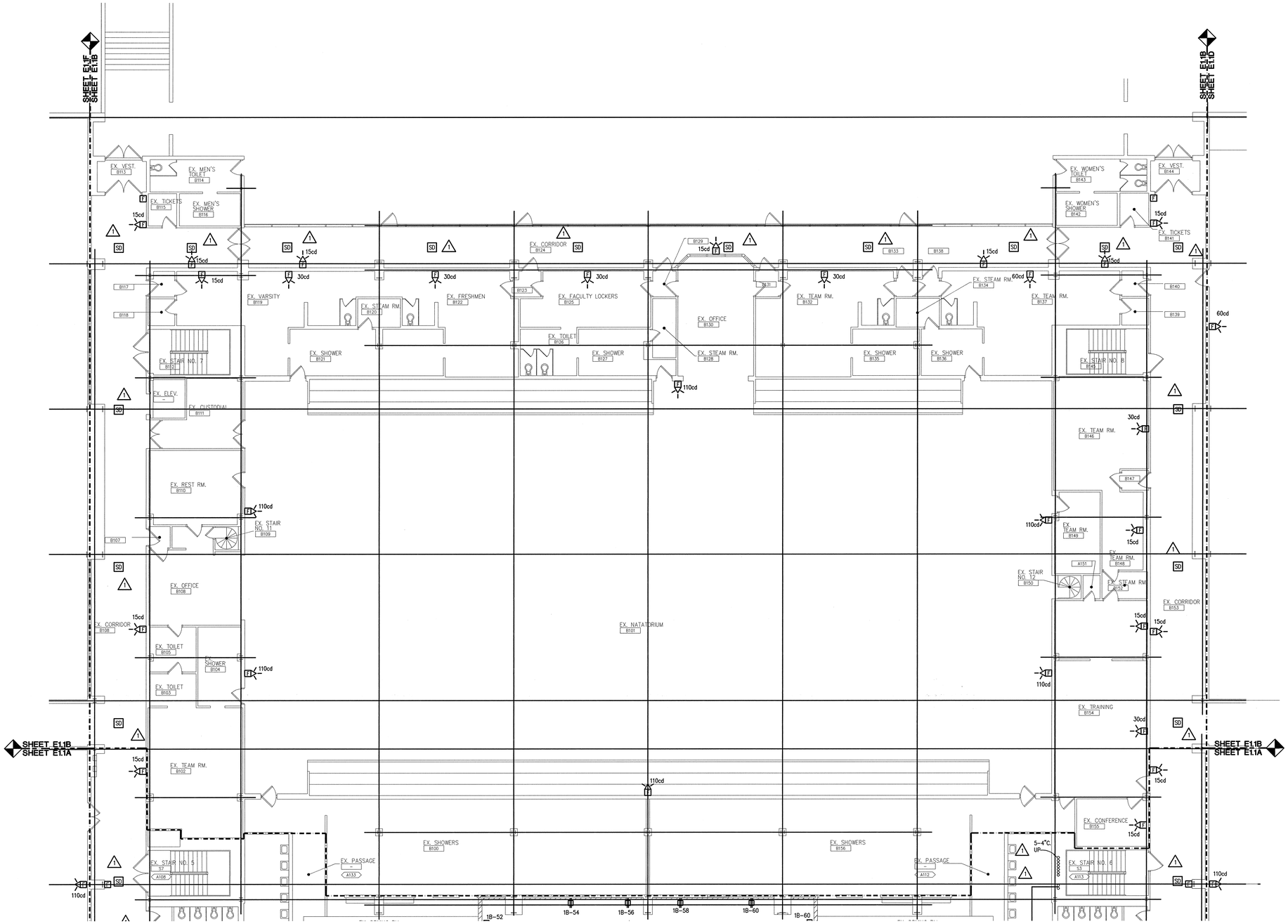


RECEIVED
AUG 19 2004
TMP ASSOCIATES, INC.

⊠ = RFB9 Floor box 14 3/4"x 12 5/8"
8'-CENTERS WEST TO EAST STARTING A Colum line 12.2
8'-CENTERS North TO SOUTH STARTING 2' SOUTH OF colum line J.8

SHEET: 90A OF: 103

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY: APP'D BY: DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED DWG NO: B-151-76 CARD NO: CP03111



TRUE NORTH

FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'B'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

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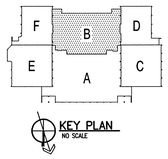
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level Power and Auxiliary Systems Plan - Zone 'B'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
4-25-05	FIELD ORDER NO. 9
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

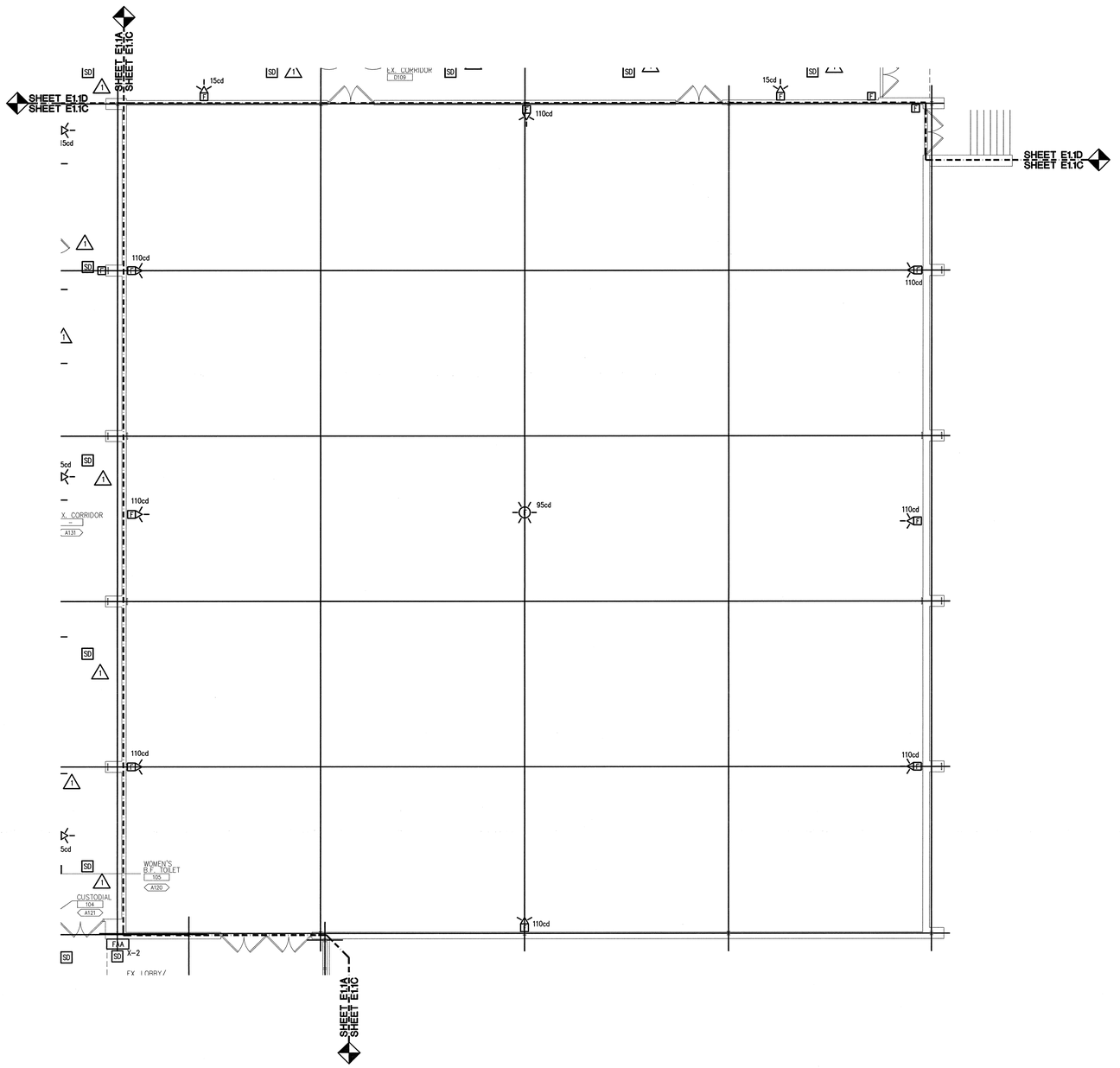
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.1B

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TRUE NORTH

FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'C'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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PBA Project No. 203205

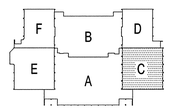
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level Power and Auxiliary Systems Plan - Zone 'C'



KEY PLAN
NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

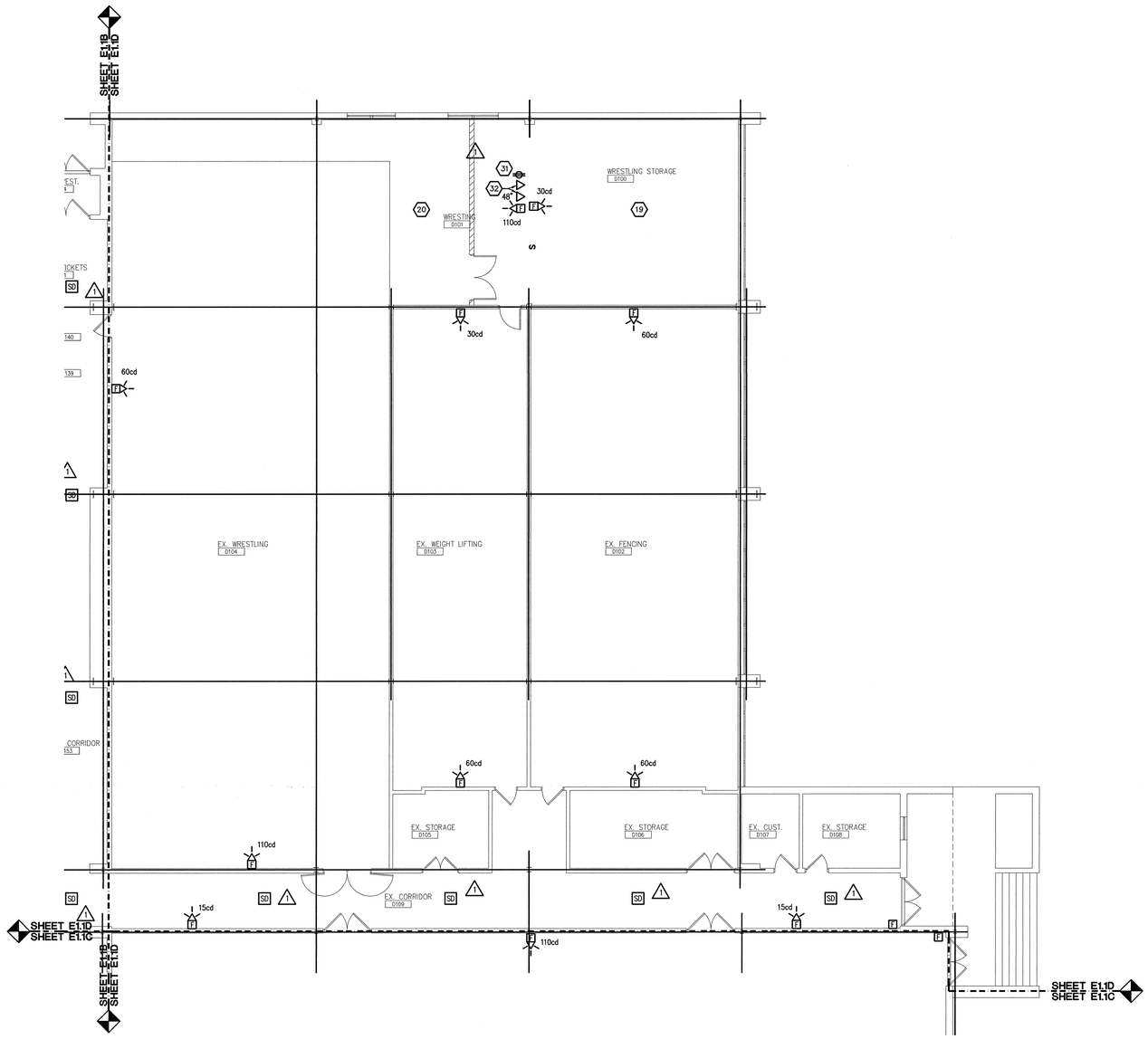
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.1C

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TRUE NORTH

FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'D'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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PBA Project No. 203205

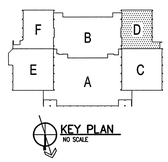
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level Power, Auxiliary Systems and Lighting Plan - Zone 'D'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

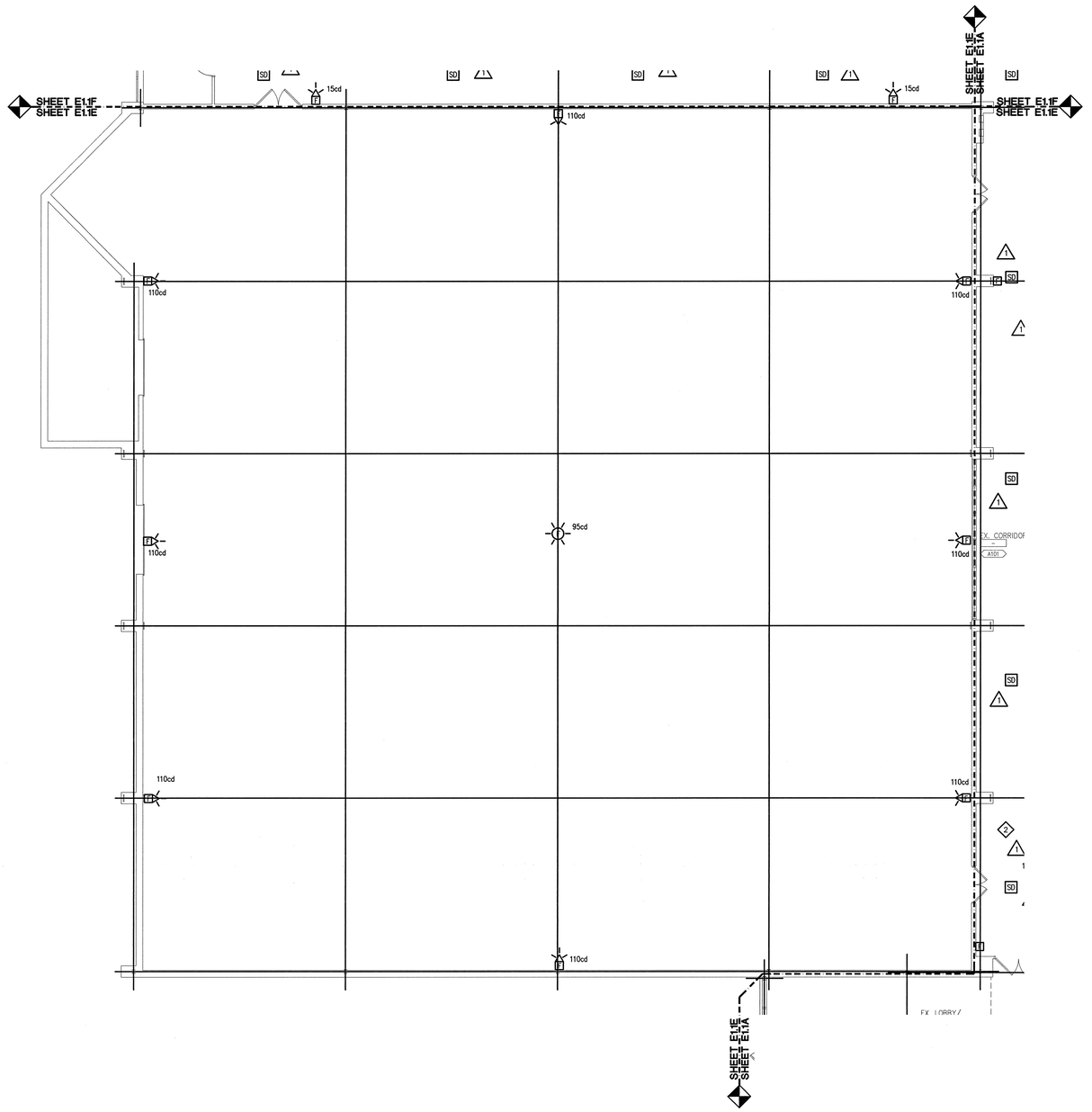
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TMP PROJECT NO. 03118

SHEET NO.

E1.1D

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TRUE NORTH

FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'E'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

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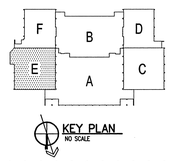
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level Power and Auxiliary Systems Plan - Zone 'E'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

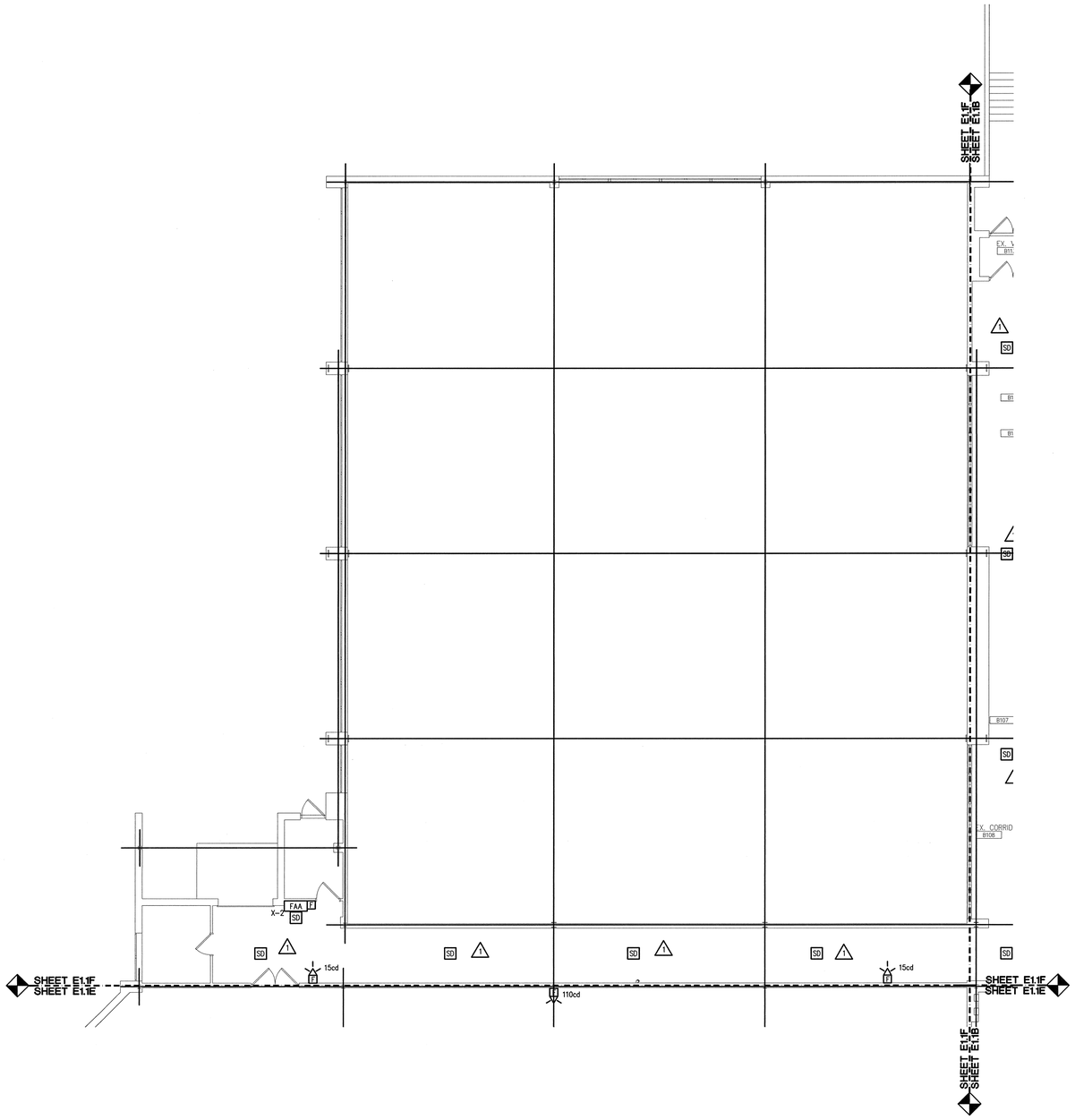
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.1E

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TRUE NORTH

N

FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'F'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

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PBA Project No. 203325

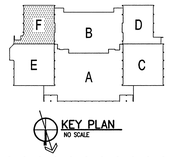
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level Power and Auxiliary Systems Plan - Zone 'F'



KEY PLAN
NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

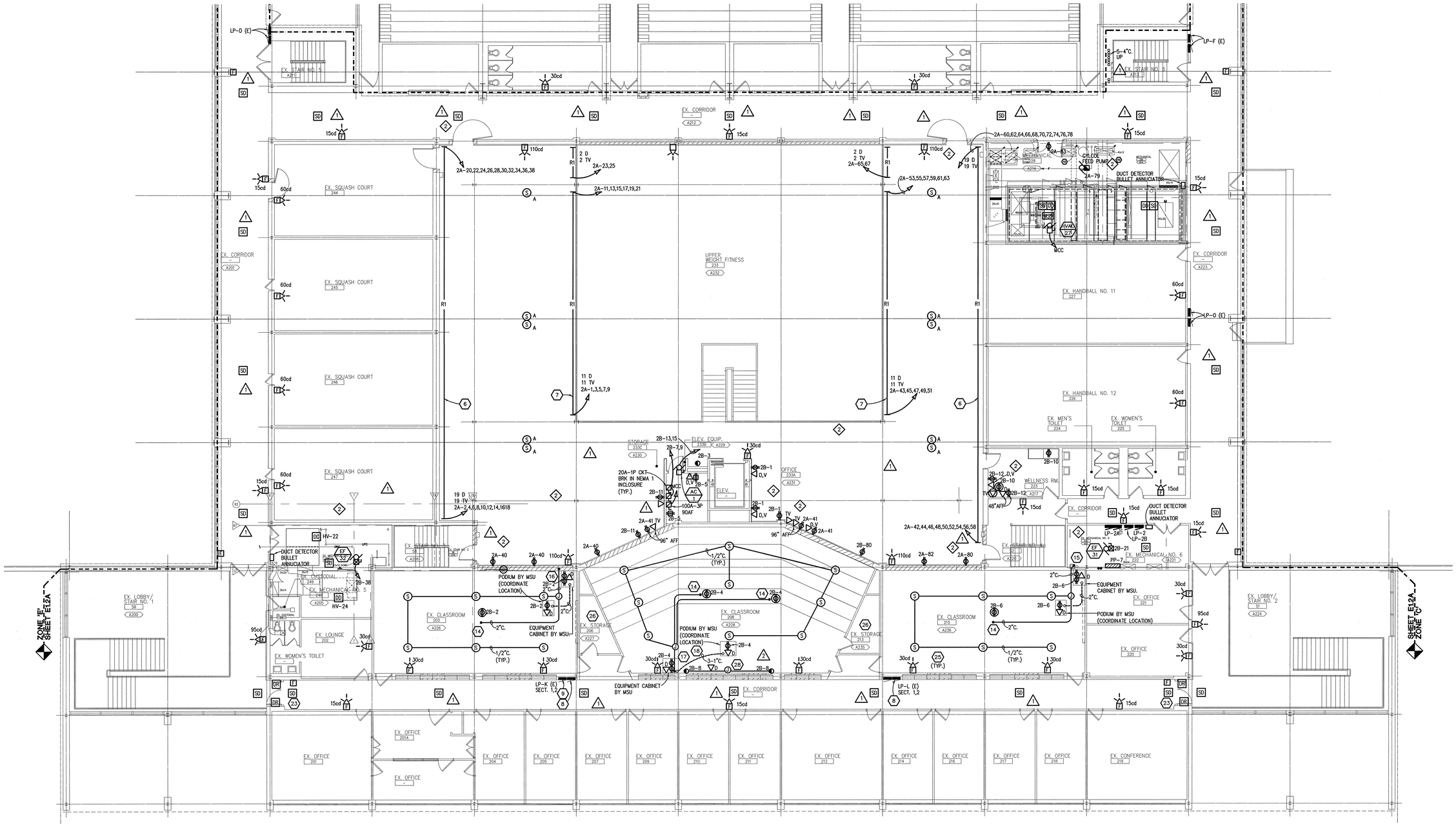
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.1F

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TRUE NORTH

SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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PBA Project No. 203205

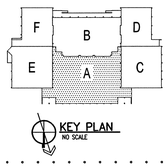
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Second Level Power and Auxiliary Systems Plan - Zone 'A'



KEY PLAN
NO SCALE

9-8-06	AS-BUILT
4-25-05	FIELD ORDER NO. 9
8-23-04	BULLETIN NO. 2
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DATE: ISSUED FOR:

DRAWN STP

CHECKED MJW

APPROVED KCR

PROJECT NO.

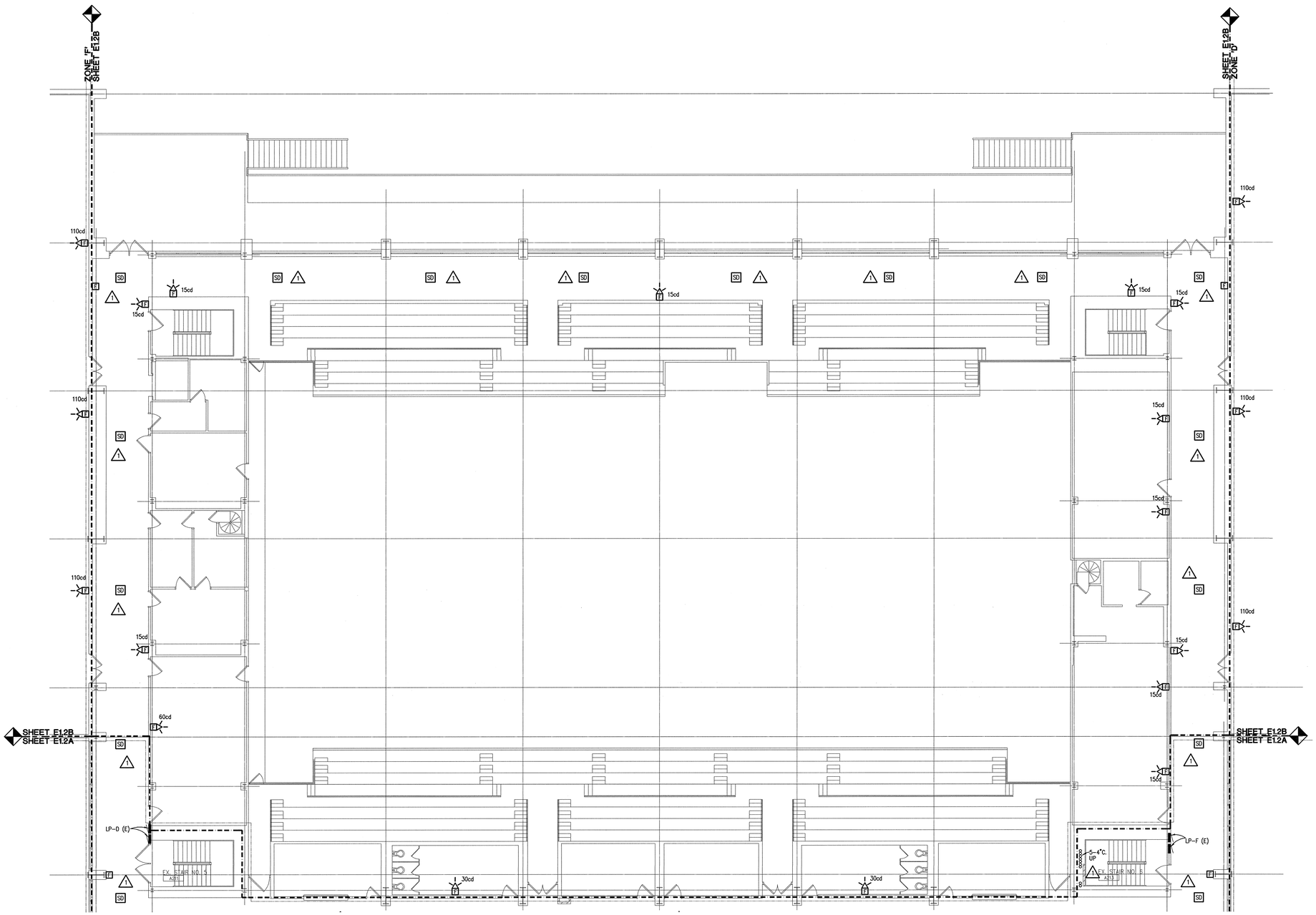
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.2A

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TRUE NORTH

SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'B'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	E-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
1191 WEST SQUARE LAKE ROAD - BOX 289
BLOOMFIELD HILLS - MICHIGAN - 48303
PH - 248.338.4561 FX - 248.338.0223
EM - INFO@TMP-ARCHITECTURE.COM

ISO 9001:2000 Registered
Peter Basso Associates Inc
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Troy, Michigan 48098-2676
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Fax: 248-879-0007
www.pbainet.com
PBA Project No. 223025

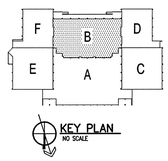
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Second Level Power and Auxiliary Systems Plan - Zone 'B'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

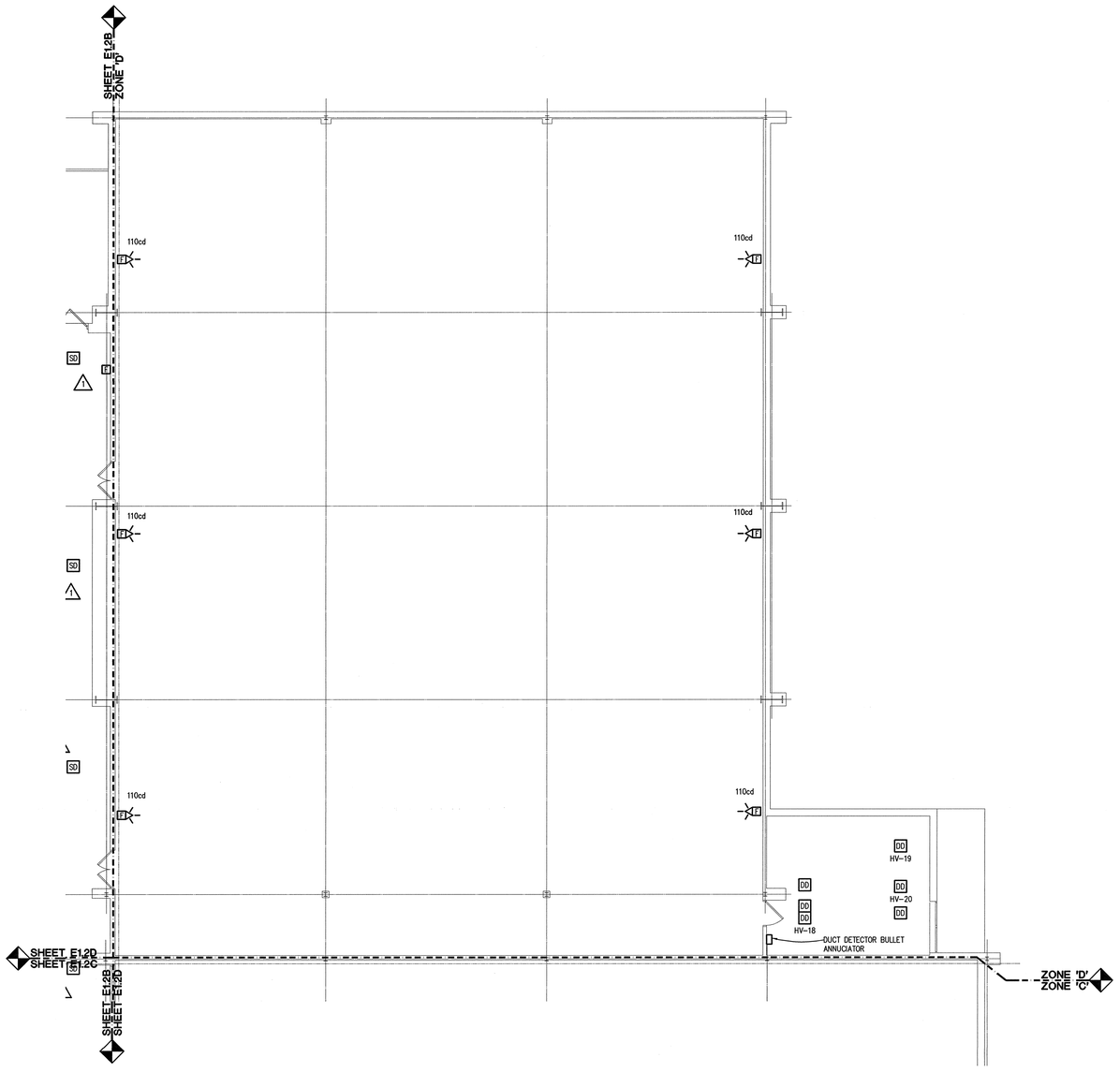
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.2B

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TRUE NORTH

SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'D'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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PBA Project No. 203305

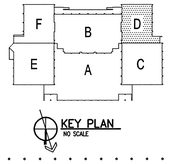
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Second Level Power and Auxiliary Systems Plan - Zone 'D'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
4-25-05	FIELD ORDER NO. 9
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

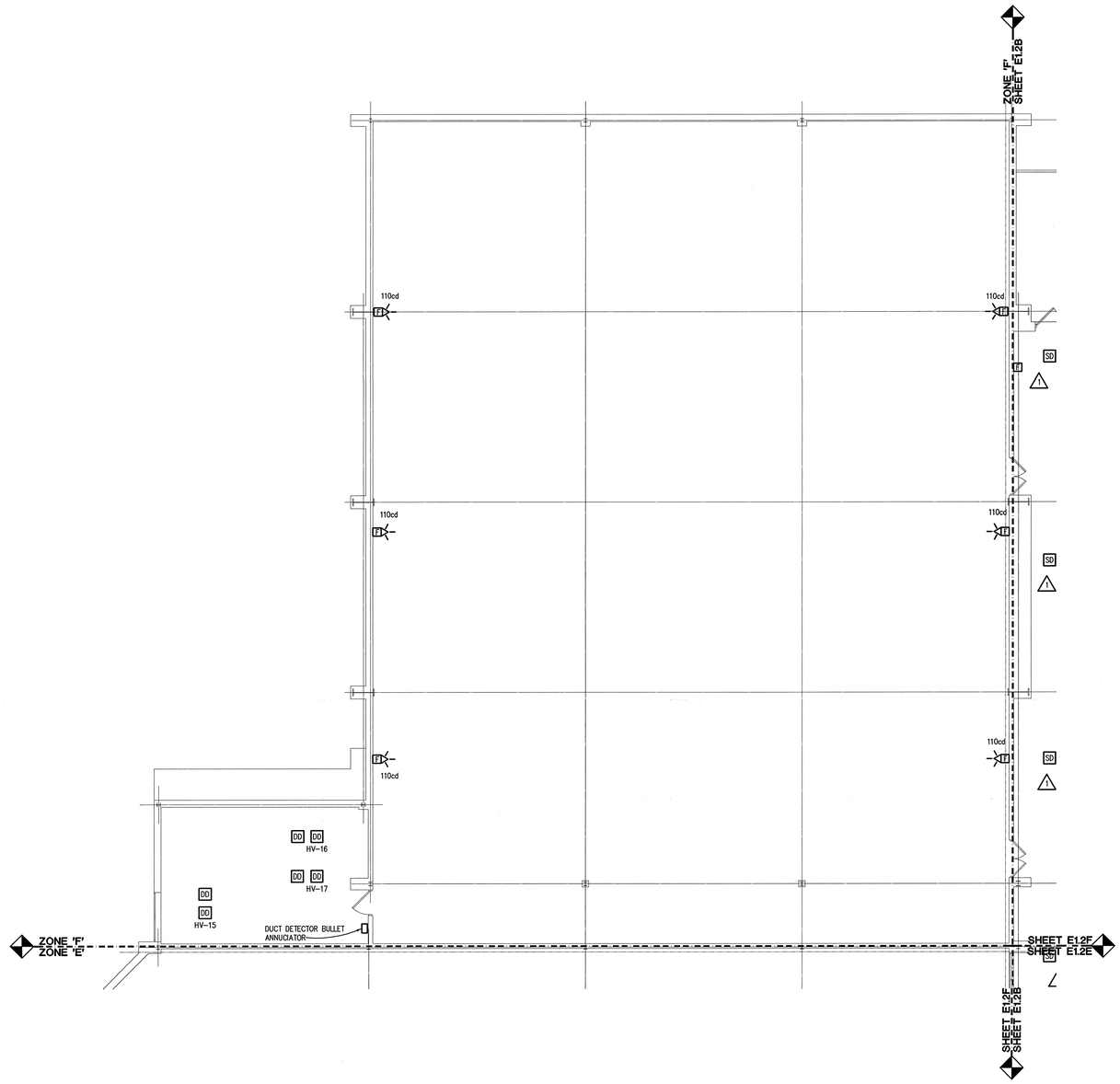
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.2D

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TRUE NORTH

N

SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'F'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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PBA Project No. 203325

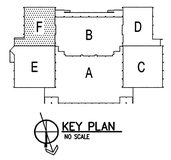
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Second Level Power and Auxiliary Systems Plan - Zone 'F'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
4-25-05	FIELD ORDER NO. 9
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

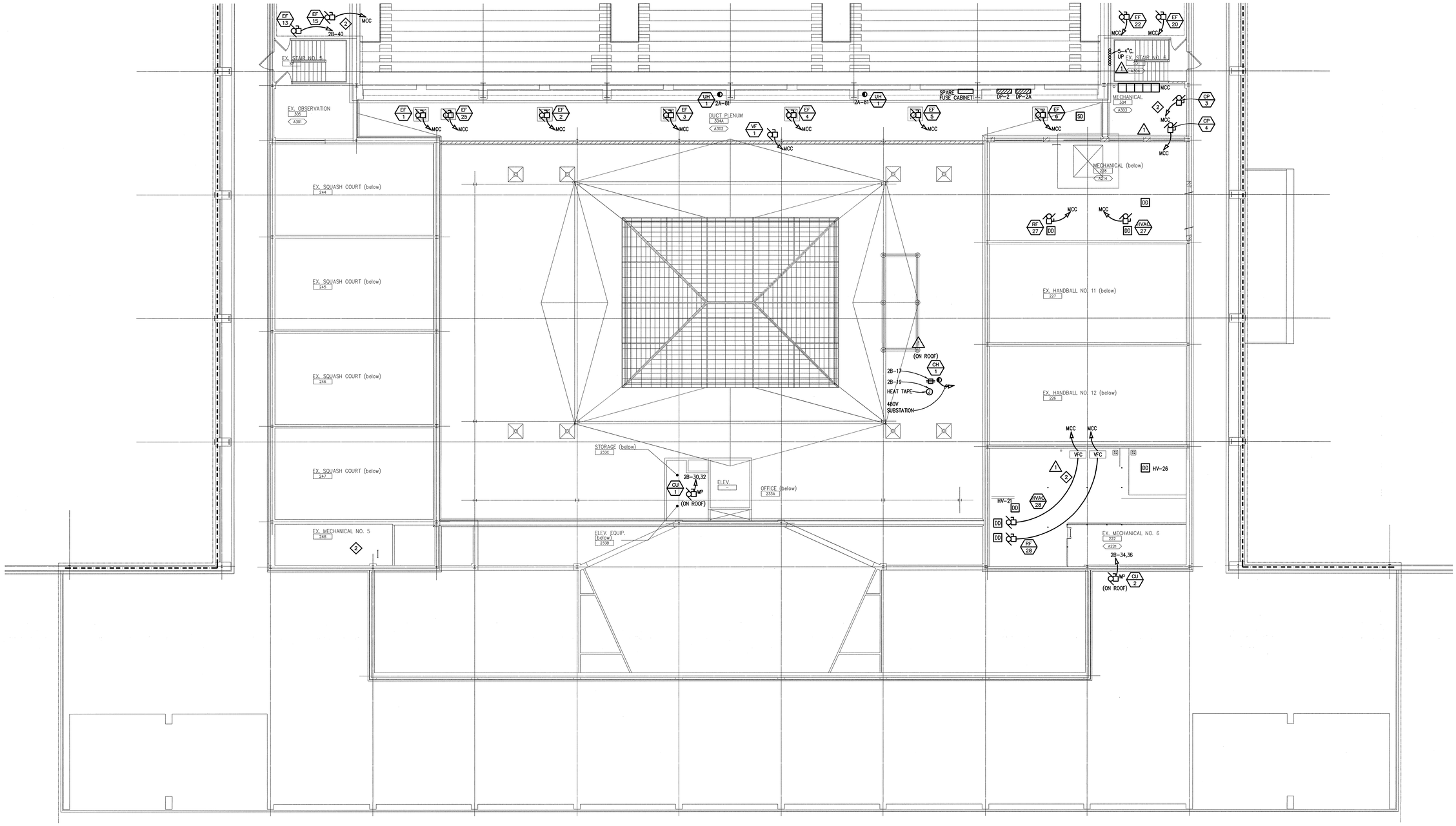
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.2F

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TRUE NORTH

THIRD LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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EM - INFO@TMP-ARCHITECTURE.COM

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PBA Project No. 203205

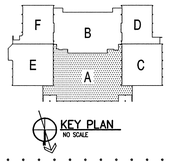
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Third Level Power and Auxiliary Systems Plan - Zone 'A'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
4-25-05	FIELD ORDER NO. 9
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

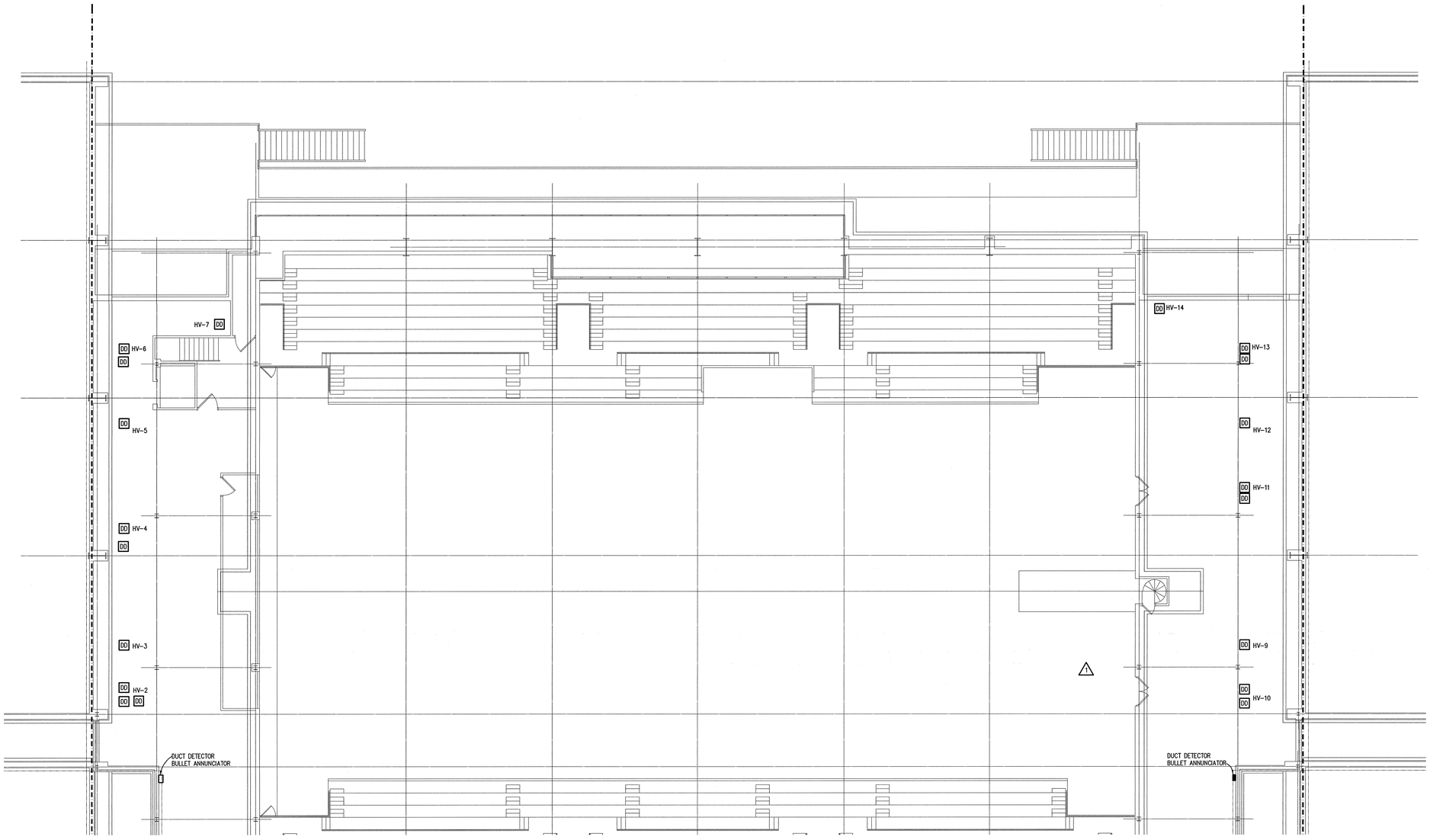
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E1.3A

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TRUE NORTH

THIRD LEVEL
POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'B'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. SEE SHEET E1.0 FOR GENERAL NOTES.

CONSTRUCTION NOTES:

1. SEE SHEET E1.0 FOR CONSTRUCTION NOTES.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

SHEET: OF:

TMP ARCHITECTURE

TMP ASSOCIATES INC
1191 WEST SQUARE LAKE ROAD - BOX 289
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PBA Project No. 203205

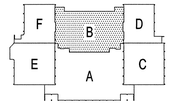
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Third Level Power and Auxiliary Systems Plan - Zone 'B'



KEY PLAN
NO SCALE

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
4-25-05	FIELD ORDER NO. 9
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

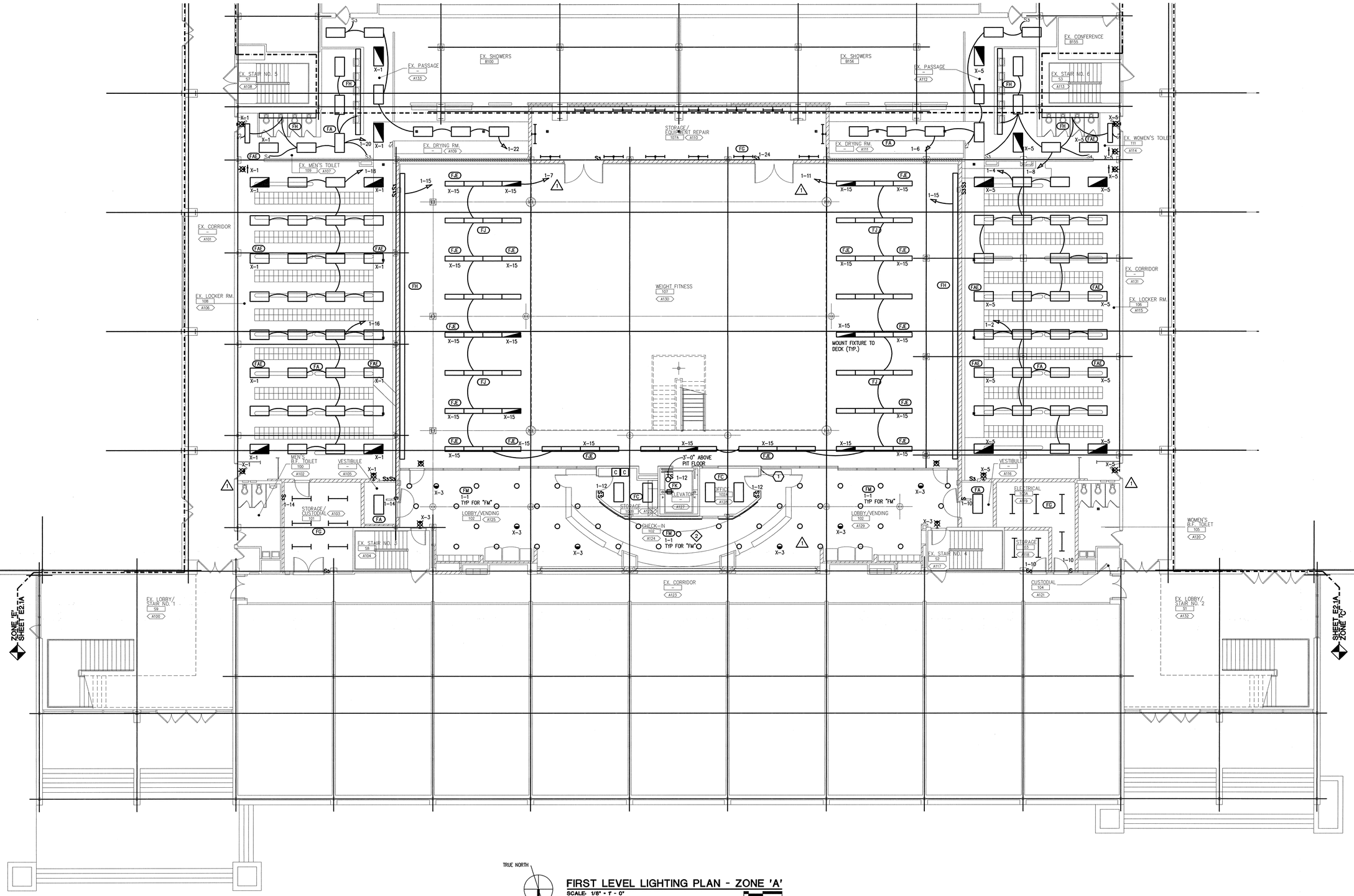
CP03111

TMP PROJECT NO. 03118

SHEET NO.

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TRUE NORTH

FIRST LEVEL LIGHTING PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. COORDINATE EXACT FIXTURE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS.
2. ALL NIGHT LIGHTS, EMERGENCY LIGHTS AND EXIT LIGHTS SHALL BE CIRCUITED TO UNSWITCHED, HOT LEG OF ADJACENT CIRCUIT OR CIRCUITED AS INDICATED ON THE DRAWINGS.
3. ALL CIRCUIT NUMBERING SHOWN IS FROM LP PANELS UNLESS NOTED OTHERWISE.
4. MOUNT ALL LIGHTING FIXTURES 9'-0"A.F.F., U.O.N.

CONSTRUCTION NOTES:

1. REFER TO SHEET E5.3 FOR SWITCHING CONFIGURATION.
2. REFER TO SHEET E5.3 FOR LIGHTING CONTROL DETAIL.
3. PROVIDE NEW SWITCHES AT EXISTING LOCATION. CHANNEL BLOCK FOR NEW BACK BOXES AND PATCH.
4. COORDINATE LOCATION OF LIGHTING FIXTURES WITH MECHANICAL EQUIPMENT.
5. PROVIDE NEW RECESSED SWITCHING. 2

SHEET: OF:

I.M. WEST ADDITION #1 (COURTYARD INFILL)	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
1191 WEST SQUARE LAKE ROAD - BOX 289
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PH - 248.338.4565 FX - 248.338.0223
EM - INFO @TMP-ARCHITECTURE.COM

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Troy, Michigan 48098-2276
Tel: 248-879-5666
Fax: 248-879-0007
www.pbainet.com
PBA Project No. 203205

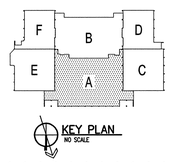
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

First Level Lighting Plan - Zone 'A'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

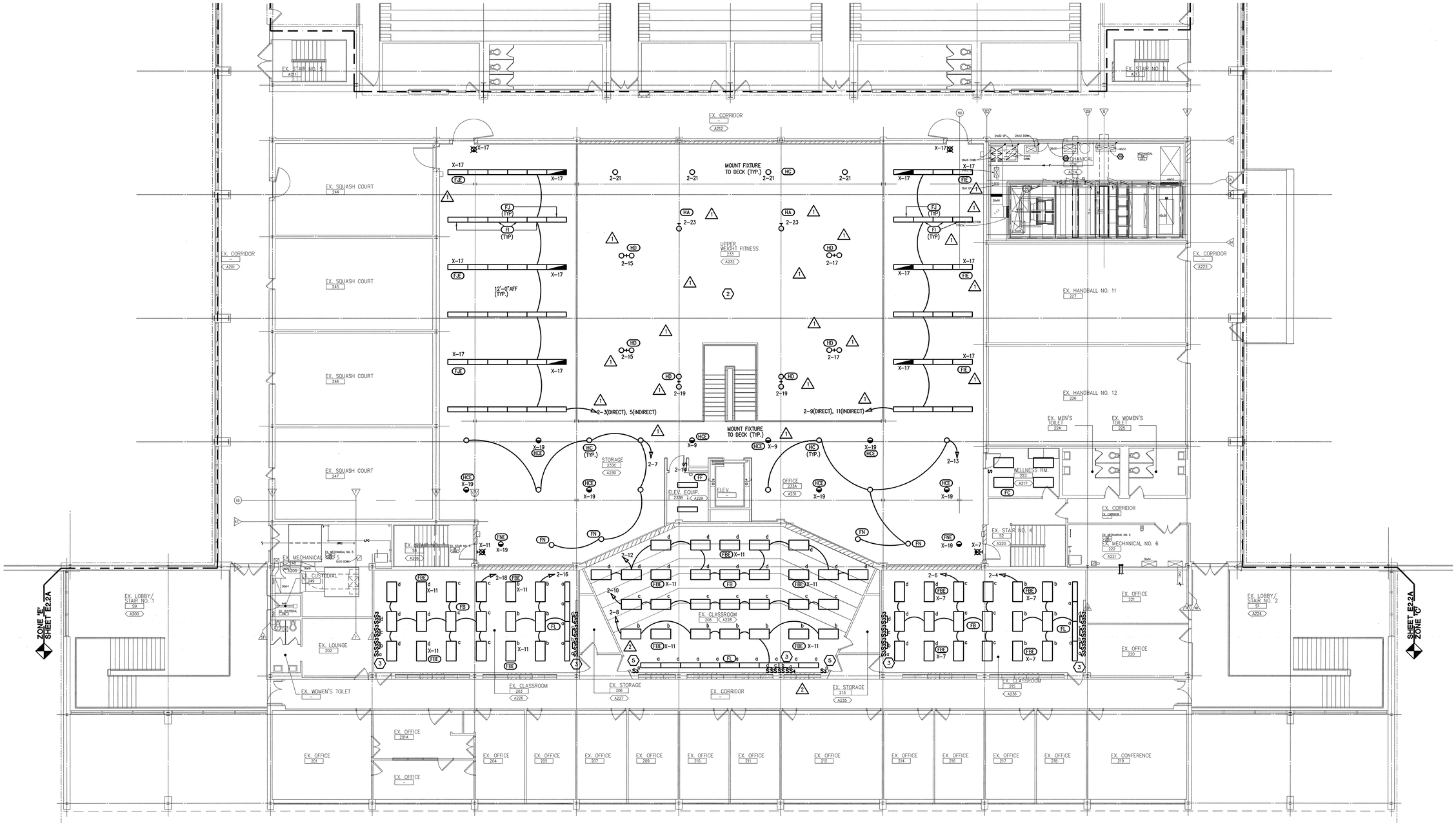
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TMP PROJECT NO. 03118

SHEET NO.

E2.1A

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TRUE NORTH

SECOND LEVEL LIGHTING PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. COORDINATE EXACT FIXTURE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS.
2. ALL NIGHT LIGHTS, EMERGENCY LIGHTS AND EXIT LIGHTS SHALL BE CIRCUITED TO UNSWITCHED, HOT LEG OF ADJACENT CIRCUIT OR CIRCUITED AS INDICATED ON THE DRAWINGS.
3. ALL CIRCUIT NUMBERING SHOWN IS FROM LP PANELS UNLESS NOTED OTHERWISE.
4. MOUNT ALL LIGHTING FIXTURES 9'-0"A.F.F., U.O.N.

CONSTRUCTION NOTES:

1. REFER TO SHEET E5.3 FOR SWITCHING CONFIGURATION.
2. REFER TO SHEET E5.3 FOR LIGHTING CONTROL DETAIL.
3. PROVIDE NEW SWITCHES AT EXISTING LOCATION. CHANNEL BLOCK FOR NEW BACK BOXES AND PATCH.
4. COORDINATE LOCATION OF LIGHTING FIXTURES WITH MECHANICAL EQUIPMENT.
5. PROVIDE NEW RECESSED SWITCHING. 2

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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5145 Livernois, Suite 100
Troy, Michigan 48098-2276
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PBA Project No. 203205

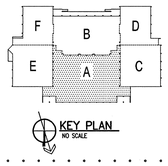
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Second Level Lighting Plan - Zone 'A'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
8-23-04	BULLETIN NO. 2
6-17-04	BULLETIN NO. 1
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

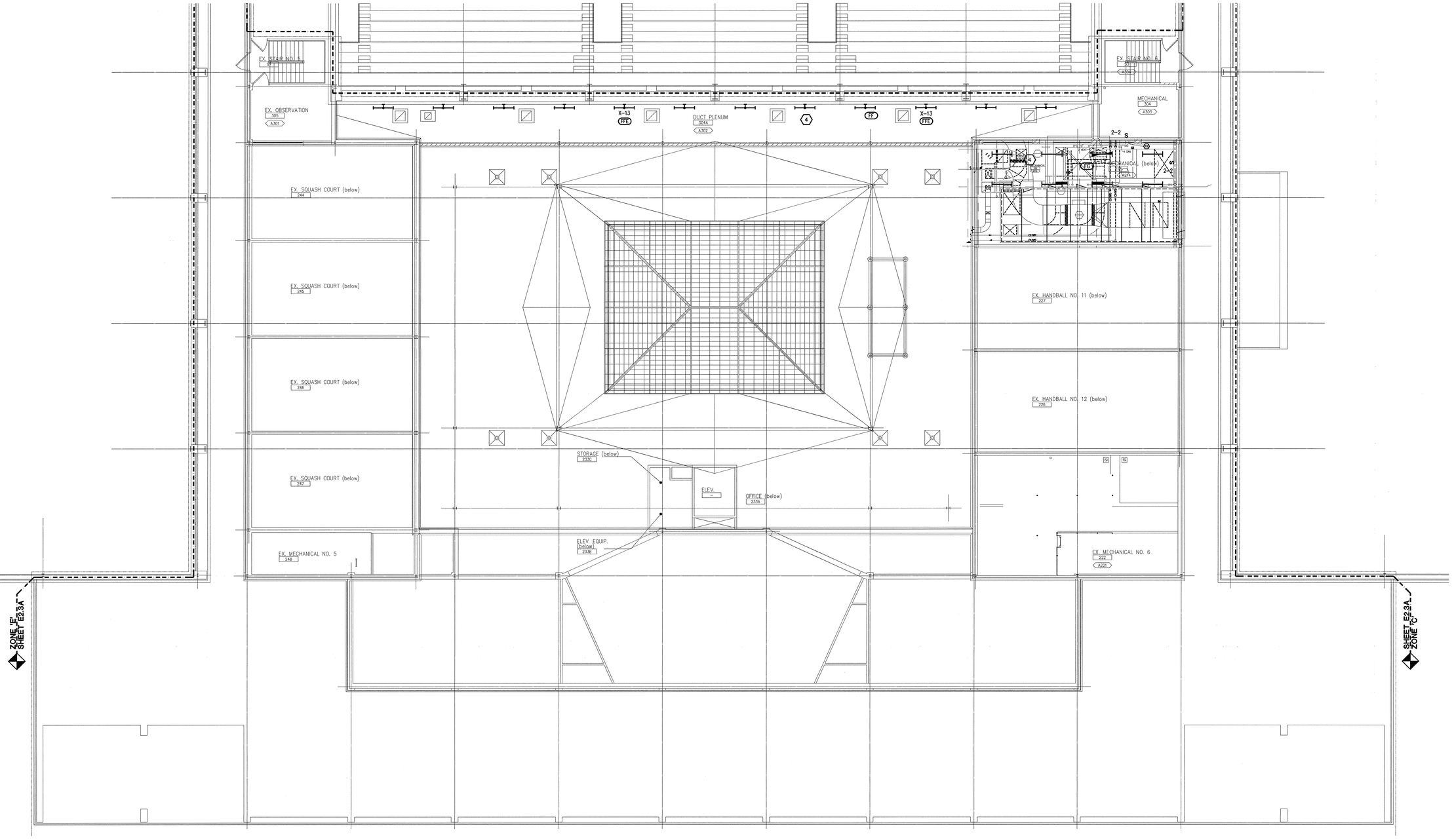
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TMP PROJECT NO. 03118

SHEET NO.

E2.2A

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TRUE NORTH

THIRD LEVEL LIGHTING PLAN - ZONE 'A'

SCALE: 1/8" = 1' - 0"

0 1 4 8

GENERAL NOTES:

1. COORDINATE EXACT FIXTURE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS.
2. ALL NIGHT LIGHTS, EMERGENCY LIGHTS AND EXIT LIGHTS SHALL BE CIRCUITED TO UNSWITCHED, HOT LEG OF ADJACENT CIRCUIT OR CIRCUITED AS INDICATED ON THE DRAWINGS.
3. ALL CIRCUIT NUMBERING SHOWN IS FROM LP PANELS UNLESS NOTED OTHERWISE.
4. MOUNT ALL LIGHTING FIXTURES 9'-0" A.F.F., U.O.N.

CONSTRUCTION NOTES:

1. REFER TO SHEET E5.3 FOR SWITCHING CONFIGURATION.
2. REFER TO SHEET E5.3 FOR LIGHTING CONTROL DETAIL.
3. PROVIDE NEW SWITCHES AT EXISTING LOCATION. CHANNEL BLOCK FOR NEW BACK BOXES AND PATCH.
4. COORDINATE LOCATION OF LIGHTING FIXTURES WITH MECHANICAL EQUIPMENT.
5. PROVIDE NEW RECESSED SWITCHING. △2

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
	APP'D BY:
	DATE:
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE: AS NOTED
	DWG NO: B-151-76
	CARD NO: CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
1191 WEST SQUARE LAKE ROAD - BOX 289
BLOOMFIELD HILLS - MICHIGAN - 48303
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ISO 9001:2000 Registered
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Troy, Michigan 48098-2678
Tel: 248-879-5666
Fax: 248-879-0007
www.pbainet.com
PBA Project No. 203205

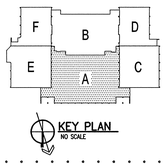
PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Third Level Lighting Plan - Zone 'A'



DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

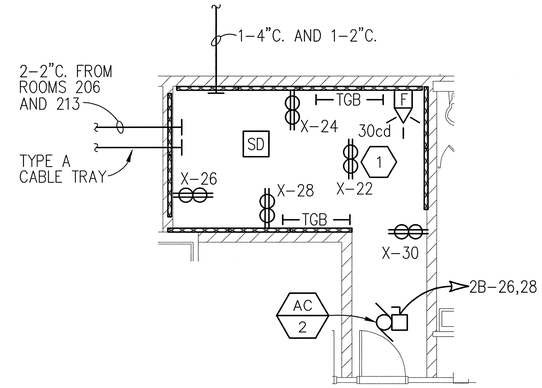
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E2.3A

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1 / E4.1 **ENLARGED TELECOM ROOM**
SCALE: 1/4" = 1'-0"

CONSTRUCTION NOTES:

1. MOUNT QUAD RECEPTACLE TO OWNER PROVIDED RACK.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET:	OF:
	DRAWN BY:	
	APP'D BY:	
	DATE:	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING & ARCHITECTURAL SERVICES	SCALE:	AS NOTED
	DWG NO:	B-151-76
	CARD NO:	CP 03111

TMP ARCHITECTURE

TMP ASSOCIATES INC
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BLOOMFIELD HILLS · MICHIGAN · 48303
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PBA Project No. 203235

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Enlarged Electrical Plan

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW
DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

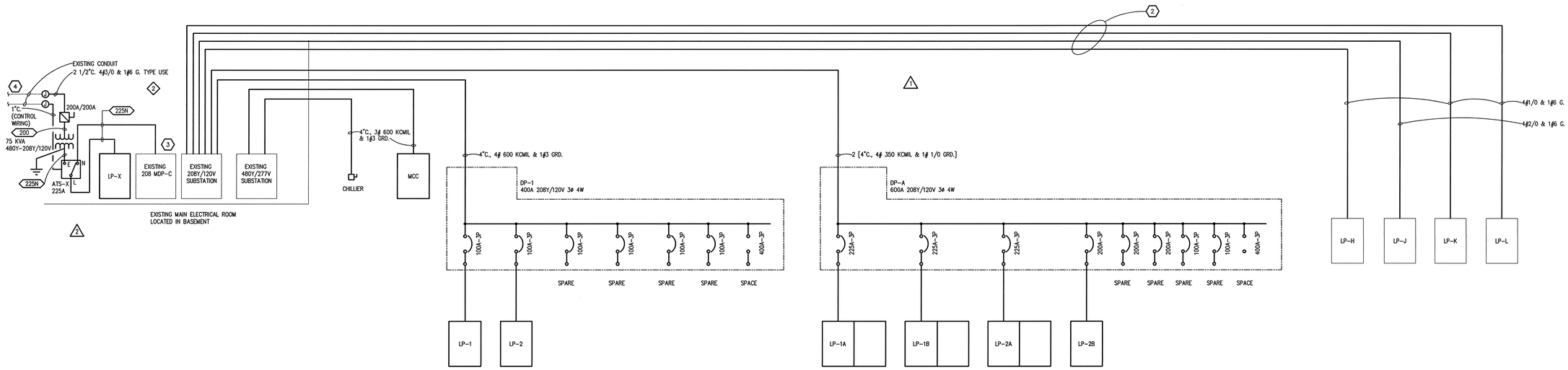
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E4.1

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ONE-LINE DIAGRAM

SCALE: NOT TO SCALE

GENERAL NOTES:

1. ALL EQUIPMENT SHALL BE PROVIDED WITH LUGS TO ACCOMMODATE THE CABLE SIZES THAT ARE INDICATED.
2. HEAVY LINE WEIGHT INDICATES NEW, LIGHT LINE WEIGHT INDICATES EXISTING.

CONSTRUCTION NOTES:

1. NOT USED
2. ROUTE NEW FEEDERS TO EXISTING PANELS, REUSE EXISTING CONDUITS.
3. REMOVE EXISTING 100A-3P CIRCUIT BREAKER AND INSTALL 225A-3P CIRCUIT BREAKER.
4. ROUTE NEW EMERGENCY FEEDER THROUGH EXISTING 4" DUCT BANK. TERMINATE FEEDER AT EXISTING EMERGENCY GENERATOR LOCATED OUTSIDE STADIUM. FIRE TAPE FEEDERS WITHIN MANHOLES. ROUTE CONTROL WIRING FROM ATS TO GENERATOR THROUGH EXISTING CONDUIT.

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
	DRAWN BY:
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	DWG NO: B-151-76
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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

One Line Diagram

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
8-23-04	BULLETIN NO. 2
6-17-04	BULLETIN NO. 1
3-26-04	ADDENDUM NO. 2
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

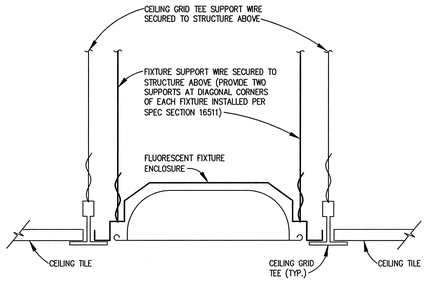
CP03111

TMP PROJECT NO. 03118

SHEET NO.

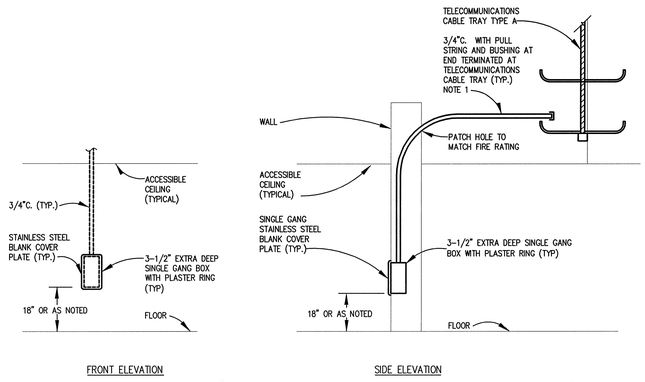
E5.1

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RECESSED FLUORESCENT FIXTURE INSTALLATION DETAIL

NO SCALE

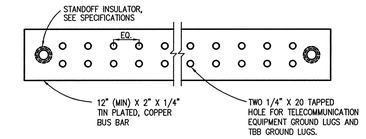


▽ RECESS MOUNTED TELECOMMUNICATIONS OUTLET DETAIL - NEW CONSTRUCTION

NO SCALE

NOTES:

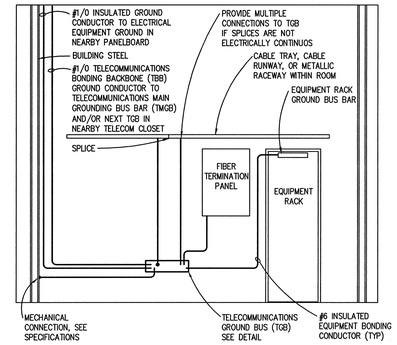
1. GROUND CONDUIT TO CABLE TRAY AS SPECIFIED.



TELECOMMUNICATIONS GROUNDING BUS BAR (TGB) DETAIL

NO SCALE

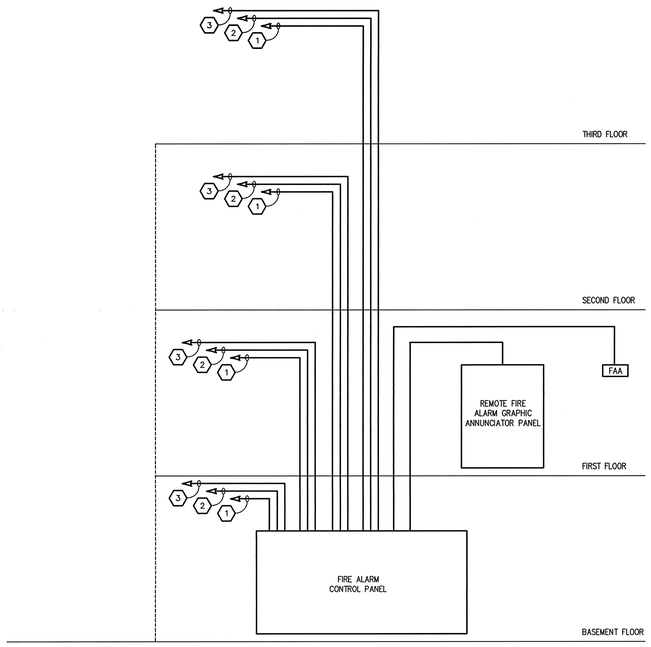
NOTE:
PROVIDE TWO HOLE LUGS FOR TBB CONNECTIONS, AND ONE HOLE LUGS FOR EQUIPMENT GROUND CONDUCTOR CONNECTIONS.



TELECOMMUNICATIONS CLOSET GROUNDING DETAIL

NO SCALE

NOTES:
1. ALL GROUNDING SHALL COMPLY WITH N.E.C. ARTICLE 250 AND TIA/EIA-607.
2. CONNECT ALL EQUIPMENT RACKS TO TGB WITH A SEPARATE EQUIPMENT BONDING CONDUCTOR.

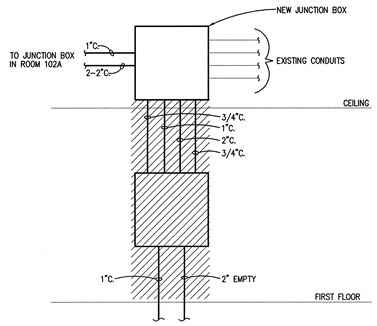


FIRE ALARM RISER DIAGRAM

NO SCALE

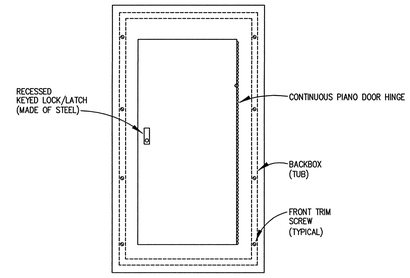
FIRE ALARM NOTES:

1. ADDRESSABLE INITIATING DEVICE LOOP (SIGNALING LINE CIRCUIT). INCLUDES MANUAL PULL STATIONS, FIRE PUMP STATUS, SMOKE DETECTORS, THERMAL DETECTORS, WATER FLOW SWITCHES, TAMPER SWITCHES, ETC. SEE PLAN DRAWINGS FOR DEVICE LOCATIONS AND QUANTITIES. PROVIDE WIRING AS SPECIFIED BY SYSTEM MANUFACTURER.
2. VISUAL NOTIFICATION APPLIANCE CIRCUIT, CLASS AND STYLE WIRING AS SPECIFIED. SEE PLAN DRAWINGS FOR FOR DEVICE LOCATION AND QUANTITIES. PROVIDE WIRING AND NUMBER OF CIRCUITS AS REQUIRED BY SYSTEM MANUFACTURER BASED ON MANUFACTURERS CIRCUIT LOAD CALCULATIONS.
3. AUDIBLE NOTIFICATION APPLIANCE CIRCUIT, CLASS AND STYLE WIRING AS SPECIFIED. SEE PLAN DRAWINGS FOR FOR DEVICE LOCATION AND QUANTITIES. PROVIDE WIRING AS SPECIFIED BY SYSTEM MANUFACTURER.



EXISTING 12" X 12" JUNCTION BOX

NO SCALE



PANELBOARD FRONT COVER DETAIL WITH CONTINUOUS PIANO HINGE

NO SCALE

SYSTEM INPUTS	ACTIVATE GENERAL ALARM SIGNAL INDICATOR	ACTIVATE EVACUATION SIGNALS	ACTIVATE SUPERVISORY SIGNAL INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE TROUBLE SIGNAL INDICATOR	ACTIVATE AUDIBLE TROUBLE SIGNAL	DISPLAY CHANGE OF STATUS	TRANSMIT FIRE ALARM SIGNAL TO CAMPUS CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CAMPUS CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CAMPUS CENTRAL STATION	RELEASE MAGNETICALLY HELD DOORS	SHUT DOWN SUPPLY AND RETURN FANS
MANUAL FIRE ALARM BOXES	●	●				●	●			●	●	
AREA SMOKE DETECTOR ACTIVATION	●	●				●	●			●		
HEAT DETECTOR ACTIVATION	●	●				●	●			●	●	
DUCT DETECTOR ACTIVATION	●					●	●			●	●	
FLOW SWITCH ACTIVATION	●					●	●			●	●	
TAMPER SWITCH ACTIVATION			●	●				●				
FIRE ALARM AC POWER FAILURE			●	●				●				
FIRE ALARM SYSTEM LOW BATTERY					●	●			●			
OPEN CIRCUIT					●	●			●			
GROUND FAULT					●	●			●			
NOTIFICATION APPLIANCE CIRCUIT SHORT					●	●			●			
FIRE PUMP STATUS (TROUBLE)					●	●			●			

FIRE ALARM MATRIX

NO SCALE

SHEET: OF:

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PBA Project No. 203205

PROJECT TITLE

I.M. West Addition #1, Courtyard Infill

Michigan State University

SHEET TITLE

Electrical Details

DATE:	ISSUED FOR:
9-8-06	AS-BUILT
6-17-04	BULL. NO. 1 (REF. ONLY)
2-18-04	BIDS
1-28-04	FINAL REVIEW

DRAWN	STP
CHECKED	MJW
APPROVED	KCR

PROJECT NO.

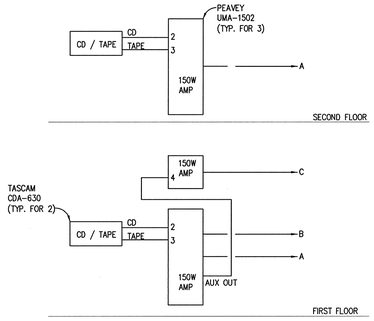
CP03111

TMP PROJECT NO. 03118

SHEET NO.

E5.2

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SOUND SYSTEM RISER DIAGRAM

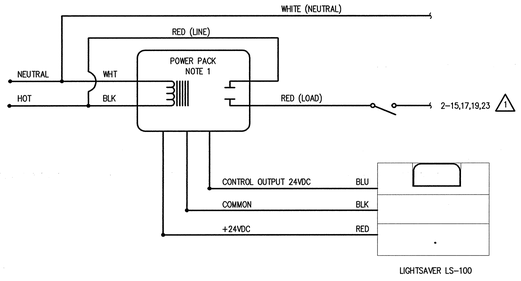
NO SCALE

- (S)A JBL CONTROL 25TWH
- (S)B JBL CONTROL 28TWH
- (S)C LOWELL R181070

SPEAKER CABLING– WEST PENN 25225B
EQUIPMENT RACK– LOWELL LJ67-36 WITH ALL NECESSARY BLANK PANELS, POWER STRIPS AND FRONT DOOR. PROVIDE SMOKE PLEXIGLAS DOOR. ◇2

NOTE:

1. PROVIDE ALL COMPONENTS INDICATED INCLUDING ALL REQUIRED PATCH CORDS, BACKBOXES AND MOUNTING HARDWARE.

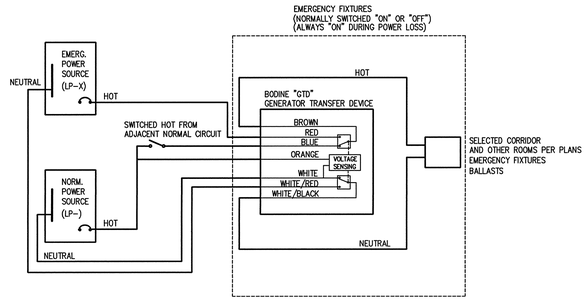


LIGHTING CONTROL DETAIL

NO SCALE

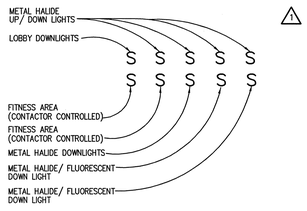
NOTE

1. UTILIZE ONE POWER PACK FOR EACH CIRCUIT.



EMERGENCY LIGHTING (FOR SWITCHED FIXTURES) TRANSFER CIRCUIT WIRING DIAGRAM

NO SCALE



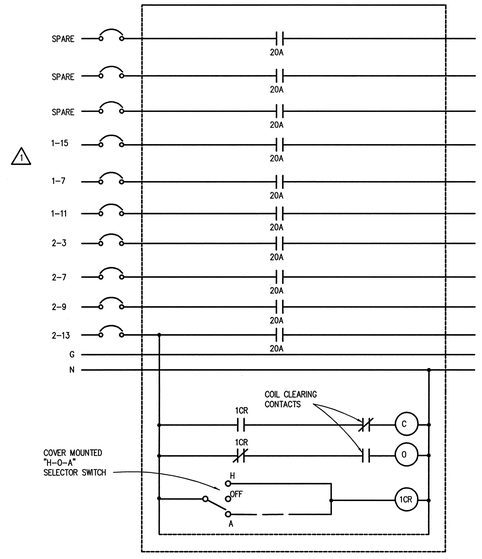
SWITCHING CONFIGURATION IN ROOM 102A

NO SCALE

◇2

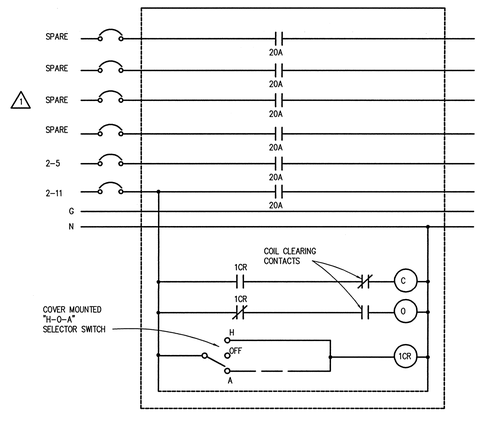
◇2

◇2



LIGHTING CONTACTOR WIRING DIAGRAM

NO SCALE



LIGHTING CONTACTOR WIRING DIAGRAM

NO SCALE

I.M. WEST ADDITION #1 (COURTYARD INFILL)	SHEET: OF:
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Michigan State University

SHEET TITLE

Electrical Details

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APPROVED	KCR

PROJECT NO.

CP03111

TMP PROJECT NO. 03118

SHEET NO.

E5.3

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