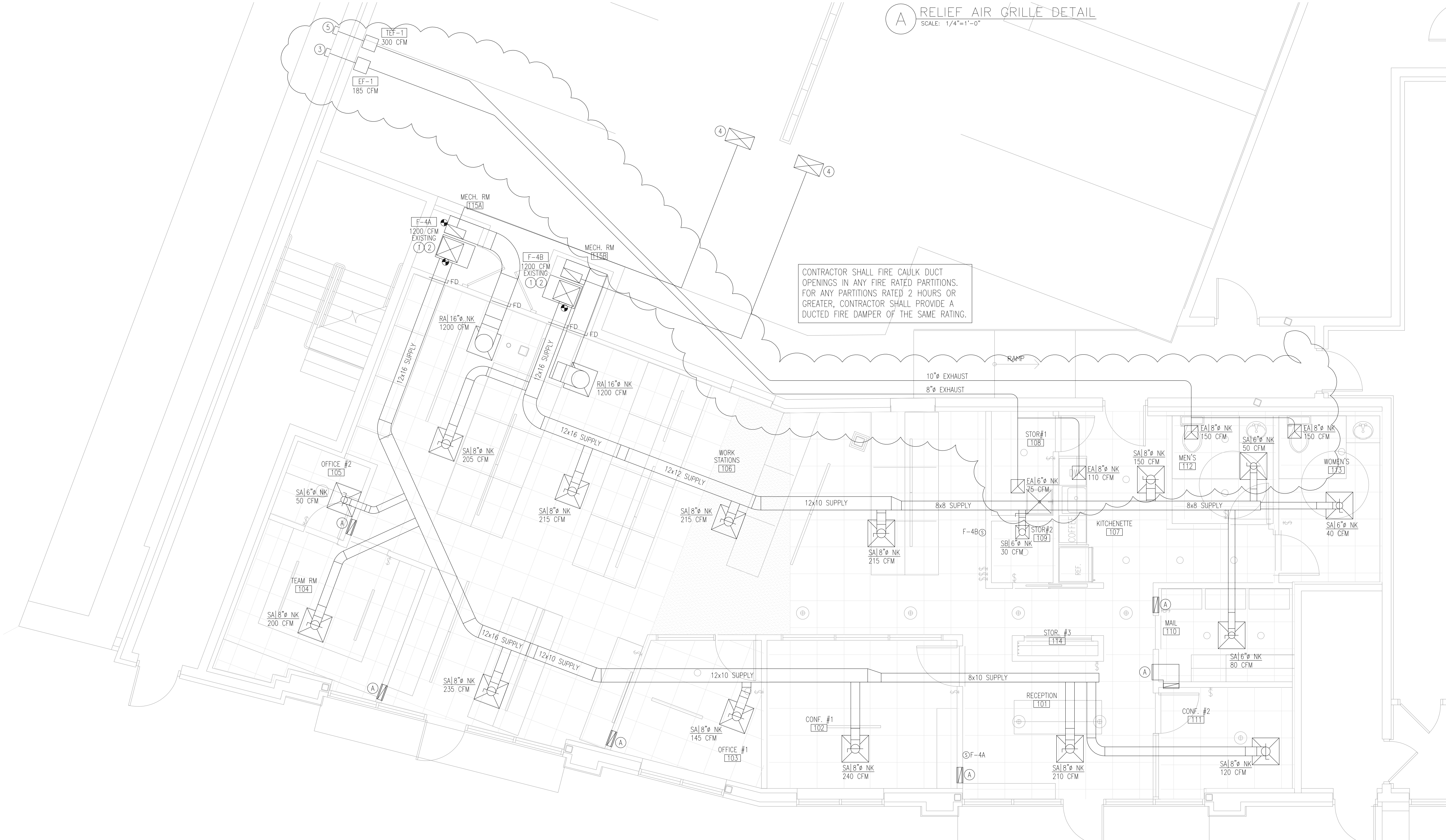


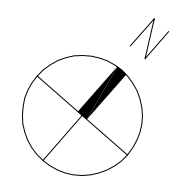
PROVIDE ONLY IF ENCLOSED ROOM IS FULLY ENCLOSED  
**(A) RELIEF AIR GRILLE DETAIL**  
 SCALE: 1/4"=1'-0"

- MECHANICAL DRAWING NOTES**
- EXISTING 3 TON FURNACE AND ASSOCIATED CONDENSING UNIT TO REMAIN. CONTRACTOR SHALL VERIFY IN FIELD THAT UNIT, ASSOCIATED DUCTWORK AND PIPING ARE SIZED CORRECTLY. VERIFICATION SHALL OCCUR PRIOR TO SUBMITTAL OF BID.
  - PROVIDE DEMAND CONTROL VENTILATION CONTROLS W/RETURN DUCT MOUNTED CO2 SENSOR. CONTRACTOR SHALL ADJUST FRESH AIR DAMPER MINIMUM POSITION TO 5% OF MAXIMUM SUPPLY AIR FLOW. DAMPER TO OPEN 100% WHEN CO2 SENSOR READS GREATER THAN OR EQUAL TO 900PPM. DAMPER SHALL CLOSE TO 5% WHEN CO2 LEVELS RETURN TO 450PPM OR LESS.
  - 8" EXHAUST DUCT SHALL BE TERMINATED AT EXTERIOR WALL DIRECTLY TO THE WEST WITH A WALL CAP. TERMINATION SHALL BE NO LESS THAN 15'-0" FROM ANY FRESH AIR OPENINGS OR OPERABLE WINDOWS.
  - EXISTING 24x12 OUTSIDE AIR INTAKE DUCT DOWN TO MIXING BOX AT FURNACE. SET MINIMUM OUTSIDE AIR INTAKE FLOW RATE PER VENTILATION SCHEDULE.
  - 10" EXHAUST DUCT SHALL BE TERMINATED AT EXTERIOR WALL DIRECTLY TO THE WEST WITH A WALL CAP. TERMINATION SHALL BE NO LESS THAN 15'-0" FROM ANY FRESH AIR OPENINGS OR OPERABLE WINDOWS.

CONTRACTOR SHALL FIRE CAULK DUCT OPENINGS IN ANY FIRE RATED PARTITIONS. FOR ANY PARTITIONS RATED 2 HOURS OR GREATER, CONTRACTOR SHALL PROVIDE A DUCTED FIRE DAMPER OF THE SAME RATING.

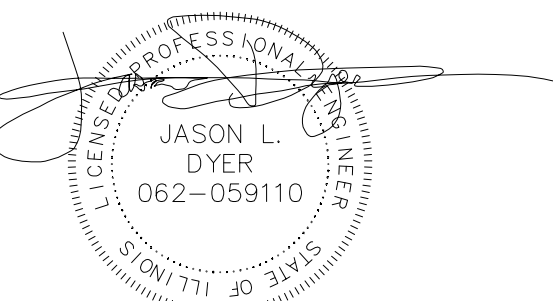


01 MECHANICAL PLAN  
 SCALE: 1/4"=1'-0"



Mechanical, Electrical, Plumbing  
 Engineering and Consulting  
 T 630)936-4700  
 2625 Butterfield Rd, Suite 138 S  
 Oak Brook, IL, 60523  
 www.trustedengineering.com  
 I.P.D.F. # 184-005121  
 EXP. 04/30/2017

I hereby certify that these plans were prepared by me, or under my direct supervision and control, and to the best of my knowledge, comply with all applicable codes.



DRAWINGS SIGNED 02/16/17

Jason L. Dyer, P.E.  
 Illinois Professional Engineer  
 Registration Number:  
 062059110  
 License Expires: 11/30/2017

REISSUED FOR PERMIT	2017-02-16
ISSUED FOR PERMIT	2016-12-23
ISSUE	DATE

PROJECT NAME:  
**@Properties  
 Offices**

PROJECT NO. 201621  
 OWNER: @Properties  
 ADDRESS: 1314 Shermer Rd  
 Northbrook, IL. 60062

DRAWING TITLE:  
**MECHANICAL  
 PLAN**

DRAWING NO. **M.100**

CONTRACTOR SHALL VERIFY ALL EXISTING MECHANICAL EQUIPMENT AND DUCTWORK IN FIELD. CONTRACTOR SHALL VERIFY IN FIELD THAT UNIT, ASSOCIATED DUCTWORK AND PIPING ARE SIZED CORRECTLY. VERIFICATION SHALL OCCUR PRIOR TO SUBMITTAL OF BID. CONTRACTOR SHALL FIRE CAULK DUCT OPENINGS IN ANY FIRE RATED PARTITIONS. FOR ANY PARTITIONS RATED 2 HOURS OR GREATER, CONTRACTOR SHALL PROVIDE A DUCTED FIRE DAMPER OF THE SAME RATING. CONTRACTOR SHALL VERIFY IN FIELD THAT UNIT, ASSOCIATED DUCTWORK AND PIPING ARE SIZED CORRECTLY. VERIFICATION SHALL OCCUR PRIOR TO SUBMITTAL OF BID.



### EXHAUST FAN SCHEDULE

EQUIPMENT TAG	LOCATION	AREA SERVED	GENERAL				FAN				ELECTRICAL				CONTROLS	NOTES		
			MANUFACTURER	MODEL	FAN TYPE	SONES	DAMPER SIZE	CFM	DRIVE	ESP. (INCHES)	MOTOR WATTS	RPM	MCA	MOCF			PHASE	VOLTS
EF-1	CEILING	STORAGE & KITCHENETTE	LOREN COOK	GC-186	FORWARD CURVED INLINE	5	8"Ø	185	DIRECT	0.50	86.6	1100	1.44	15	1	120	INTERLOCK WITH RELAY PER ELECTRICAL DRAWINGS	1,2,3,4,5,6
TEF-1	CEILING	MEN'S & WOMEN'S	LOREN COOK	GC-542	FORWARD CURVED INLINE	5	10"Ø	300	DIRECT	0.50	109	1600	1.82	15	1	120	INTERLOCK WITH RELAY PER ELECTRICAL DRAWINGS	1,2,3,4,5,6

**NOTES:**  
 1. SINGLE POINT WIRING CONNECTION  
 2. EXHAUST TERMINATION SHALL BE AT LEAST 2'-0" ABOVE OR 10'-0" FROM ANY O.A.I. OPENING  
 3. PROVIDE WIRE MESH SCREEN  
 4. EXHAUST TERMINATION SHALL BE AT LEAST 10'-0" ABOVE GRADE  
 5. PROVIDE GRAVITY BACKDRAFT DAMPER  
 6. PROVIDE UNIT MOUNTED DISCONNECT

### INTERNATIONAL MECHANICAL CODE VENTILATION SCHEDULE

ROOM NAME	OCCUPANCY TYPE	AREA (SQ.FT.)	# OF PEOPLE	AIR DISTRIBUTION EFFECTIVENESS	ORDINANCE REQUIRED		ACTUAL MINIMUM PROVIDED			EQUIPMENT SERVING		REMARKS
					O.A.I. CFM	EXHAUST CFM	SUPPLY CFM	O.A.I. CFM	EXHAUST CFM	SUPPLY FAN	EXHAUST FAN	
RECEPTION 101	RECEPTION	144	4	0.8	38	N.R.	210	52.5	0	F-4A	N/A	
CONF#1 102	CONFERENCE	155	8	0.8	60	N.R.	240	60	0	F-4A	N/A	
OFFICE#1 103	OFFICE	95	1	0.8	13	N.R.	145	36.25	0	F-4A	N/A	
TEAM ROOM 104	OFFICE	132	1	0.8	14	N.R.	200	50	0	F-4A	N/A	
OFFICE#2 105	OFFICE	33	1	0.8	9	N.R.	50	12.5	0	F-4A	N/A	
WORK STATIONS 106	OFFICE	170	1	0.8	18	N.R.	235	58.75	0	F-4A	N/A	
OFFICE	OFFICE	770	4	0.8	82	N.R.	780	195	0	F-4B	N/A	
KITCHENETTE 107	KITCHEN	142	N/A	0.5	N.R.	99	150	37.5	110	F-4B	EF-1	INTERMITTENT EXHAUST
STORAGE#1 108	STORAGE	35	N/A	N/A	N.R.	N.R.	0	0	75	N/A	EF-1	
STORAGE#2 109	STORAGE	21	N/A	N/A	N.R.	N.R.	30	7.5	0	F-4B	N/A	
MAIL 110	OFFICE	69	1	0.8	11	N.R.	80	20	0	F-4B	N/A	
MEN'S 111	TOILET (PUBLIC)	46	N/A	0.8	N.R.	70	40	10	150	F-4B	TEF-1	HEAVY USE
WOMEN'S 112	TOILET (PUBLIC)	77	N/A	0.8	N.R.	70	50	12.5	150	F-4B	TEF-1	HEAVY USE
CONF#2 113	CONFERENCE	77	4	0.8	30	N.R.	120	30	0	F-4A	N/A	
CORRIDOR	CORRIDOR	168	N/A	0.8	13	N.R.	70	17.5	0	F-4B	N/A	
TOTAL		2134	24		288	239	2400	600	485			

Spaces unheated or maintained below 50°F are not covered by these requirements unless the occupancy is continuous. N.R. = NOT REQUIRED

### DIFFUSER, GRILLE, AND REGISTER SCHEDULE

EQUIPMENT TAG	MANUFACTURER	MODEL	TYPE	SERVICE TYPE	MATERIAL	MAXIMUM NOISE CRITERIA	NOTES
SA	TITUS	OMNI	24"x24" SQUARE PLAQUE DIFFUSER	SUPPLY	STEEL	25	1,2
SB	TITUS	OMNI	12"x12" SQUARE PLAQUE DIFFUSER	SUPPLY	STEEL	25	1,2
RA	TITUS	50F	24"x24" EGG CRATE GRILLE	RETURN	ALUMINUM	25	2
RB	TITUS	350ZRL	0 DEGREE LOUVERED GRILLE	RETURN	STEEL	25	1,2
EA	TITUS	350RL	12"x12" 35 DEGREE LOUVERED GRILLE	EXHAUST	STEEL	25	1,2

**NOTES:**  
 1. COLOR TO BE SELECTED BY ARCHITECT/OWNER  
 2. CONTRACTOR SHALL DETERMINE BORDER TYPE  
 DIFFUSERS, GRILLES, AND REGISTERS ABOVE HARD CEILING MUST HAVE EXTERNALLY ACCESSIBLE ADJUSTABLE VOLUME DAMPERS

### MECHANICAL GENERAL NOTES

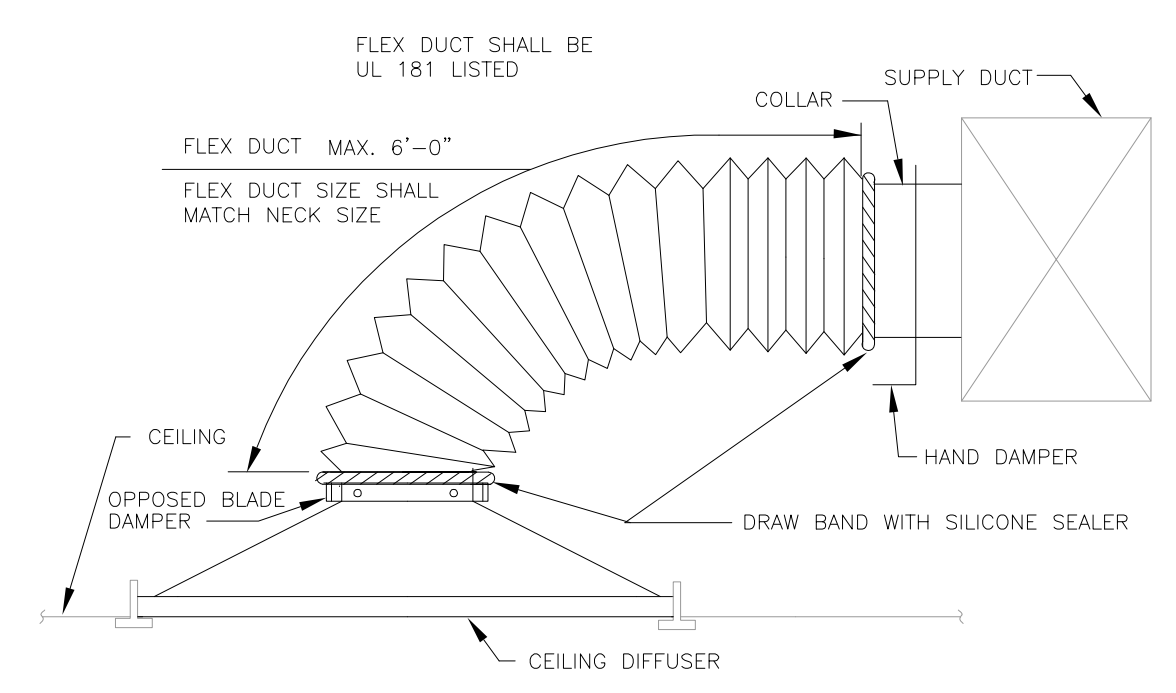
- ALL EQUIPMENT AND COMPONENTS FOR HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS SHALL COMPLY AND BE INSTALLED FOR THE EFFICIENT UTILIZATION OF ENERGY IN ACCORDANCE WITH LOCAL CODES.
- ALL MECHANICAL EQUIPMENT SHALL BEAR THE LABEL OF AN APPROVED AGENCY, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE INFORMATION ON THE LABEL AND PER THE MANUFACTURER'S RECOMMENDATIONS. THE MECHANICAL CONTRACTOR SHALL MAINTAIN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR ALL MECHANICAL EQUIPMENT AT THE JOB SITE. THE MECHANICAL EQUIPMENT SPECIFIED SHALL MEET ALL APPLICABLE STANDARDS INCLUDING THE INTERNATIONAL MECHANICAL CODE, SMACNA, ASHRAE, AND THE INTERNATIONAL FUEL GAS CODE WHERE IT APPLIES.
- THE CONSTRUCTION OF ALL DUCTWORK MUST BE IN ACCORDANCE WITH THE LATEST SMACNA DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE COVERINGS AND LININGS, INCLUDING ADHESIVES. SHALL HAVE A FLAME-SPREAD INDEX NO MORE THAN 25 AND A SMOKE-DEVELOPED INDEX NOT MORE THAN 50, WHEN TESTED IN ACCORDANCE WITH ASTM E 84. DUCT COVERINGS AND LININGS SHALL NOT FLAME, GLOW, SMOLDER OR SMOKE WHEN TESTED IN ACCORDANCE WITH ASTM C 411 AT THE TEMPERATURE TO WHICH THEY ARE EXPOSED IN SERVICE. THE TEST TEMPERATURE SHALL NOT FALL BELOW 250 DEG. F. FLEXIBLE DUCTS AND CONNECTORS SHALL BE LIMITED TO A MAXIMUM LENGTH OF 10 FEET. DUCTS MUST BE SEALED IN ACCORDANCE WITH THE INTERNATIONAL ENERGY CONSERVATION CODE. RIGID DUCTS MUST BE SUPPORTED AT INTERVALS NOT EXCEEDING 10 FEET. ALL AIR FILTERS SHALL BE LISTED AND LABELED.
- MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL FIRE DAMPERS IN DUCTWORK AND FIRESTOP ALL PIPE PENETRATIONS THRU RATED FLOORS, CEILINGS AND WALLS. VERIFY LOCATIONS OF ALL RATED ASSEMBLIES WITH ARCHITECTURAL PLANS. FIRE DAMPERS SHALL BE IN ACCORDANCE WITH UL 555.
- THE MECHANICAL CONTRACTOR SHALL HIRE AN INDEPENDENT AND CERTIFIED TEST AND BALANCE CONTRACTOR, AND SHALL PROVIDE A TEST AND BALANCE REPORT TO BE SENT TO THE BUILDING DEPARTMENT NO LESS THAN THREE DAYS PRIOR TO FINAL INSPECTION.
- PROVIDE LOCKABLE MANUAL BALANCING DAMPERS AT ALL BRANCH TAKE-OFFS TO AIR DEVICES. BRANCH SIZES TO AIR DEVICES SHALL BE SAME AS AIR DEVICE NECK SIZE UNLESS SHOWN OTHERWISE ON PLANS.
- ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE NATIONAL, STATE AND LOCAL CODES AND REGULATIONS GOVERNING THE INSTALLATION OF THE WORK INVOLVED. ALL PERMITS FOR THE INSTALLATION OF THE WORK AND ALL INSPECTIONS OF SAME SHALL BE ARRANGED FOR BY THIS CONTRACTOR. ALL FEES AND ASSESSMENTS IN CONNECTION THEREWITH SHALL BE PAID BY THIS CONTRACTOR, THE COST OF WHICH SHALL BE INCLUDED IN THEIR BID.
- ALL CONCEALED RECTANGULAR SUPPLY AND RETURN DUCTWORK SHALL BE WRAPPED WITH 1-1/2" FOIL FACED INSULATION. ALL CONCEALED ROUND SHALL BE WRAPPED WITH 1-1/2" FOIL FACED INSULATION.
- ALL VENTS AND EXHAUSTS SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKES PER LOCAL CODES. PLUMBING VENTS SHALL BE A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE. EXTEND TERMINATION HEIGHT TO PROVIDE A 10'-0" CROSS SECTION CLEARANCE FROM PLUMBING VENTS WHERE NEEDED.
- COORDINATE DIFFUSER LAYOUT WITH ARCHITECTURAL AND ELECTRICAL REFLECTED CEILING PLANS.
- ALL DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE, UNLESS NOTED OTHERWISE ON PLANS.
- FLEXIBLE DUCT SHALL BE UTILIZED AS MUCH AS POSSIBLE AS ACCEPTABLE PER CODE, IN UNLIMITED LENGTHS.

### MECHANICAL LEGEND

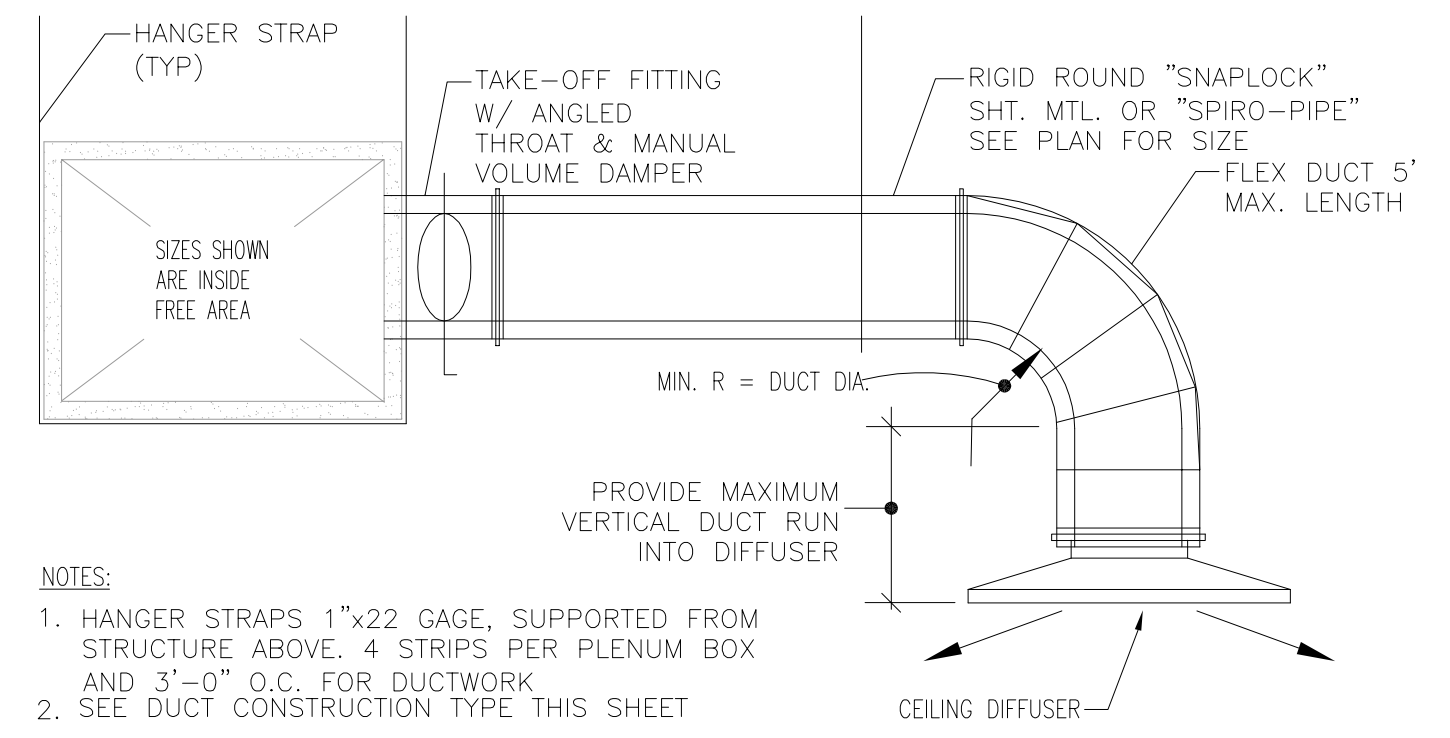
- NEW DUCTWORK AND AIR DEVICES TO MATCH EXISTING.
- EXISTING DUCTWORK AND AIR DEVICES TO REMAIN. CLEAN AND RECONDITION AS REQUIRED.
- EXISTING DUCTWORK AND AIR DEVICES TO BE REMOVED.
- ⊖ THERMOSTAT - TRANE, MTD @ 50°F AFF, U.N.O.
- ⊙ SENSOR (REMOTE TEMPERATURE) MTD @ 50°F AFF
- ⊕ SENSOR (REMOTE HUMIDITY) MTD @ 50°F AFF
- ⊞ TAKEOFF WITH MANUAL VOLUME DAMPER
- ⊟ LOCKABLE MANUAL VOLUME DAMPER (MVD)
- FD FIRE DAMPER
- AFB ABOVE FINISHED FLOOR
- BFC BELOW FINISHED CEILING
- MVD LOCKABLE MANUAL VOLUME DAMPER
- UC UNDER CUT DOOR
- ⊕ NEW TO EXISTING CONNECTION
- RT-1 EQUIPMENT TAG
- ⊙ (CFM) (SIZE) NEW AIR DEVICE TAG
- ⊞ CEILING SUPPLY DIFFUSER
- ⊟ CEILING RETURN AIR DIFFUSER
- ⊞ SUPPLY REGISTER
- ⊟ RETURN / EXHAUST GRILLE

### DUCTWORK SIZING ALTERNATIVES

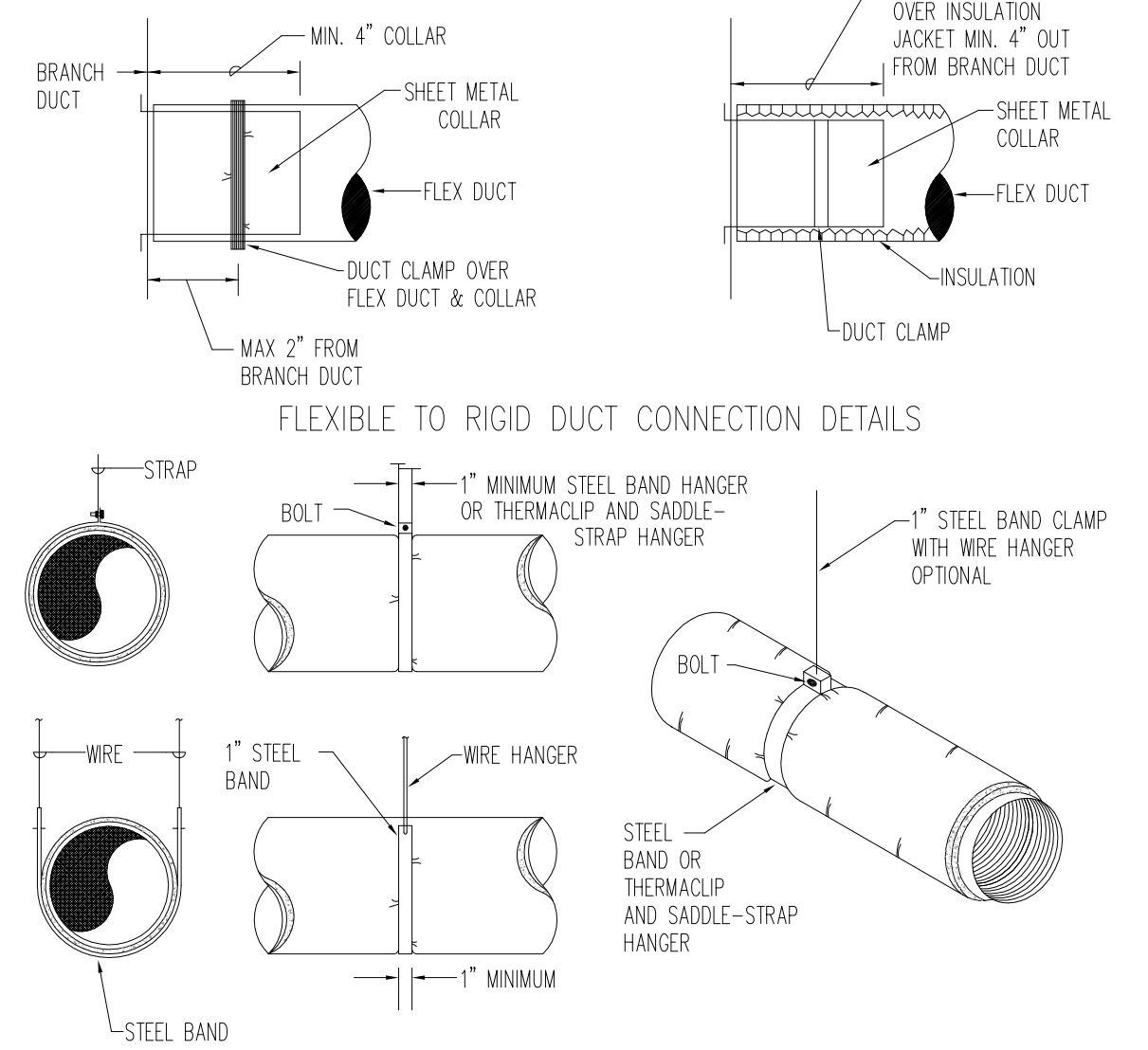
MAXIMUM CFM	ROUND OPTION	SQUARE OPTION	RECTANGULAR OPTION
65	5"Ø	6"x6"	6"x4"
120	6"Ø	6"x6"	8"x4"
150	7"Ø	6"x6"	10"x4"
250	8"Ø	8"x8"	10"x6" OR 14"x4"
435	10"Ø	10"x8"	14"x6"
710	12"Ø	12"x10"	14"x8" OR 20"x6"
1000	14"Ø	12"x12"	16"x10" OR 20"x8"
1500	16"Ø	14"x14"	20"x10" OR 26"x8"
2000	18"Ø	16"x16"	26"x10" OR 32"x8"
3000	22"Ø	20"x18"	28"x12" OR 40"x10"



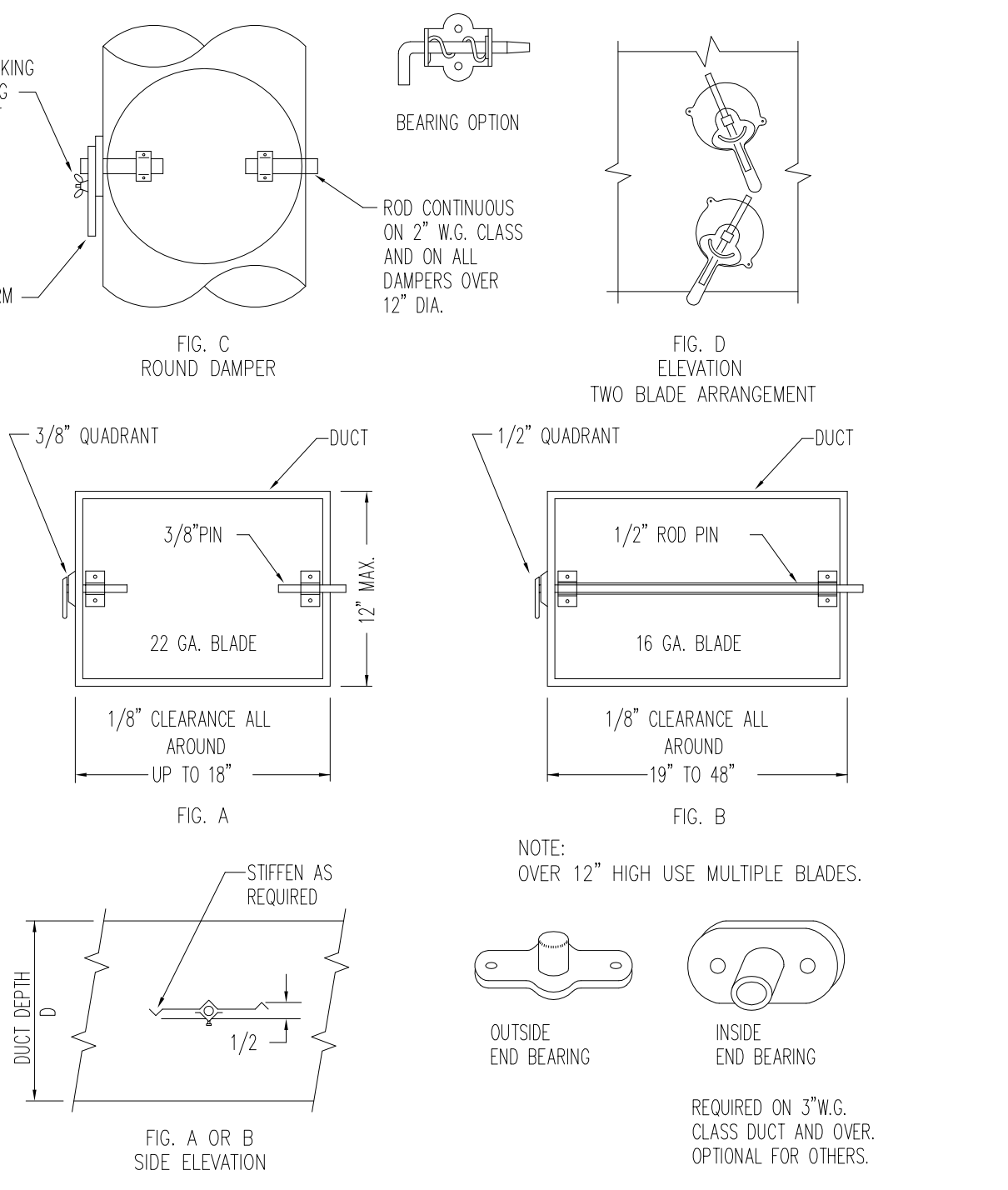
TYPICAL DIFFUSER CONNECTION  
NO SCALE (SIDE OF DUCT CONNECTION)



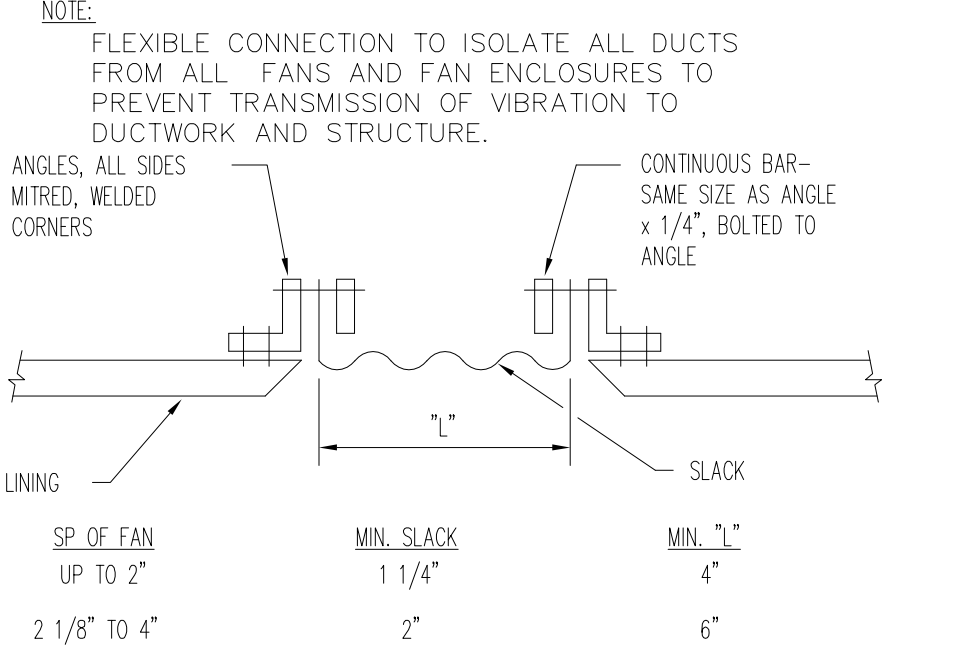
DUCT DETAIL  
NO SCALE



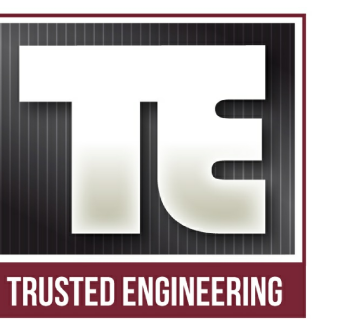
FLEXIBLE DUCT HANGER & CONNECTION DETAILS  
NO SCALE



VOLUME DAMPERS - LOCK TYPE  
NO SCALE

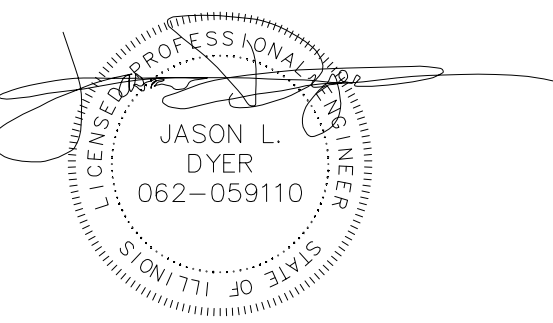


FLEXIBLE CONNECTION  
NO SCALE



Mechanical, Electrical, Plumbing Engineering and Consulting  
T 630)936-4700  
2625 Butterfield Rd, Suite 138 S  
Oak Brook, IL, 60523  
www.trustedengineering.com  
I.P.D.F. # 184-005121  
EXP. 04/30/2017

I hereby certify that these plans were prepared by me, or under my direct supervision and control, and to the best of my knowledge, comply with all applicable codes.



DRAWINGS SIGNED 02/16/17  
Jason L. Dyer, P.E.  
Illinois Professional Engineer  
Registration Number:  
062059110  
License Expires: 11/30/2017

REISSUED FOR PERMIT	2017-02-16
ISSUED FOR PERMIT	2016-12-23
ISSUE	DATE

PROJECT NAME:  
**@Properties Offices**

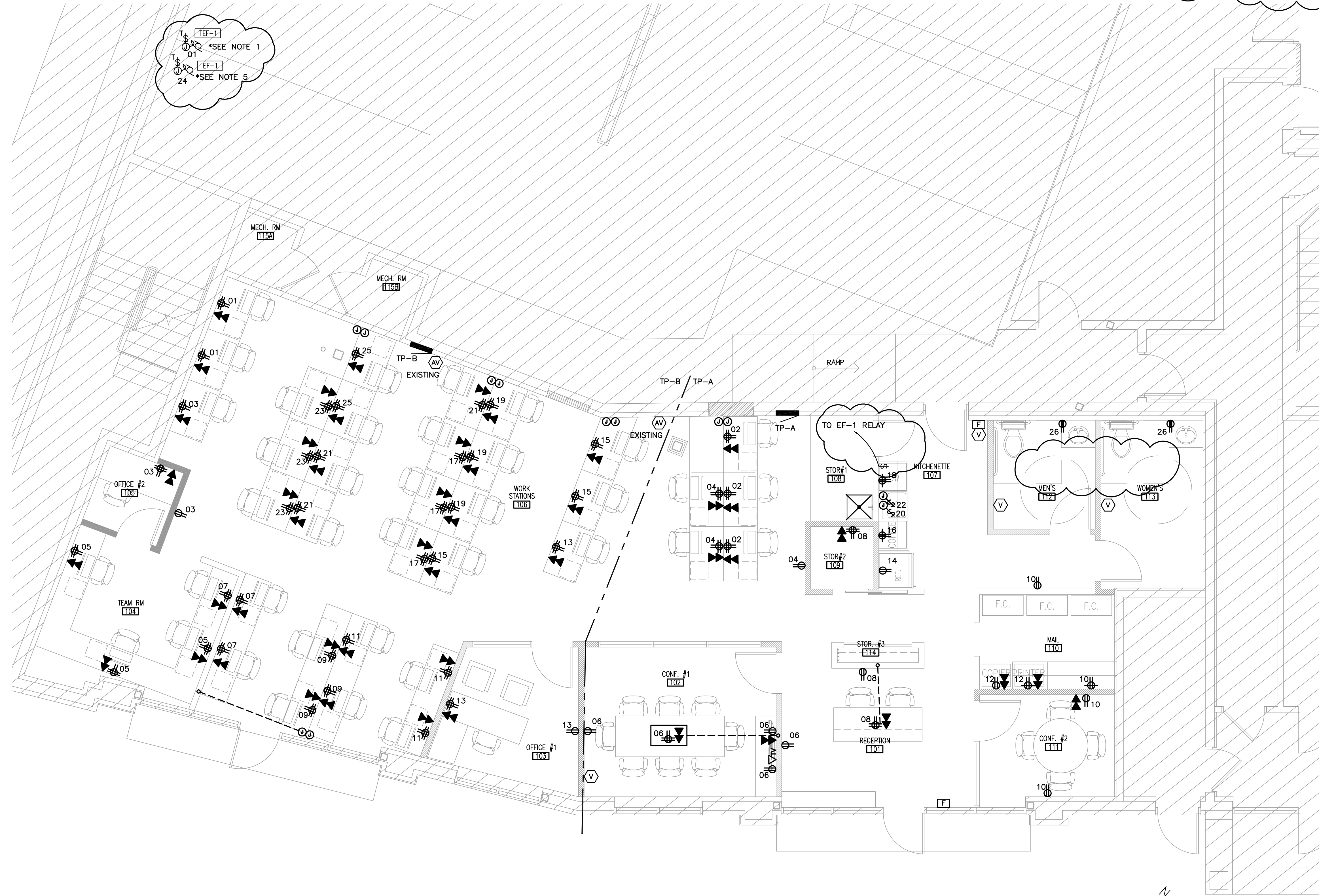
PROJECT NO. 201621  
OWNER: @Properties  
ADDRESS: 1314 Shermer Rd  
Northbrook, IL 60062

DRAWING TITLE:  
**MECHANICAL SCHEDULES & DETAILS**

DRAWING NO.: **M.200**



- DRAWING NOTES**
1. INTERLOCK WITH LOCAL LIGHTING CONTROL FOR MENS AND WOMENS RESTROOMS. PROVIDE 120V RELAY. FAN SHALL TURN "ON" WHEN EITHER RESTROOM IS OCCUPIED.
  2. SEE MECHANICAL DRAWINGS FOR FAN EQUIPMENT INFORMATION.
  3. SEE PLUMBING DRAWINGS FOR HOT WATER HEATER INFORMATION.
  4. COORDINATE WITH FURNITURE PROVIDER AND PROVIDE ALL REQUIRED CONNECTIONS.
  5. INTERLOCK WITH LOCAL LIGHTING CONTROL FOR STORAGE AND SWITCH ABOVE KITCHENETTE AREA COUNTER AS INDICATED. PROVIDE 120V RELAY. FAN SHALL TURN "ON" WHEN EITHER STORAGE ROOM OR SWITCH IS TURNED "ON" AT KITCHENETTE AREA.



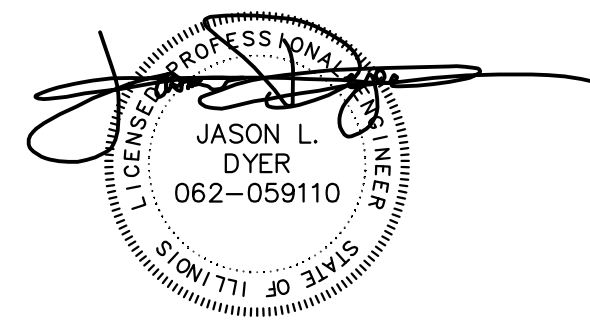
EF-1  
01 \*SEE NOTE 1  
EF-1  
24 \*SEE NOTE 5

01 ELECTRICAL POWER PLAN  
SCALE: 1/4" = 1'-0"



Mechanical, Electrical, Plumbing  
Engineering and Consulting  
T 630/936-4700  
2625 Butterfield Rd, Suite 138 S  
Oak Brook, IL, 60523  
www.trustedengineering.com  
I.P.D.F. # 184-005121  
EXP. 04/30/2017

I hereby certify that these plans were prepared by me, or under my direct supervision and control, and to the best of my knowledge, comply with all applicable codes.



DRAWINGS SIGNED 02/16/17

Jason L. Dyer, P.E.  
Illinois Professional Engineer  
Registration Number:  
062059110  
License Expires: 11/30/2017

THESE PLANS ARE THE PROPERTY OF TRUSTED ENGINEERING AND CONSULTING. ANY REUSE OR REPRODUCTION OF THESE PLANS WITHOUT THE WRITTEN PERMISSION AND CONSENT OF TRUSTED ENGINEERING AND CONSULTING IS STRICTLY PROHIBITED.

REISSUED FOR PERMIT	2017-02-16
ISSUED FOR PERMIT	2016-12-23
ISSUE	DATE

PROJECT NAME:  
**@Properties  
Offices**

PROJECT NO. 201621  
OWNER: @Properties  
ADDRESS: 1314 Shermer Rd  
Northbrook, IL 60062

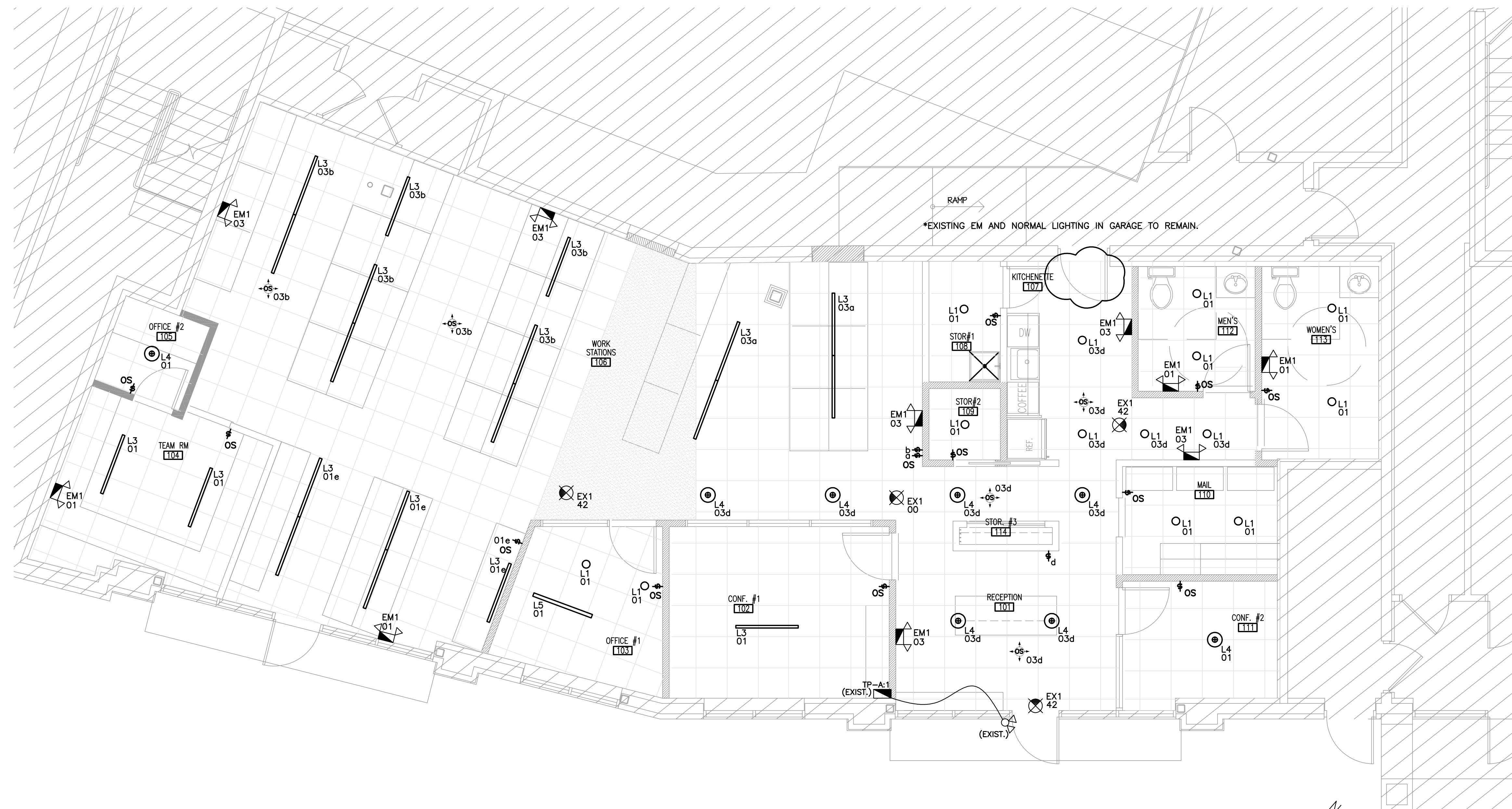
DRAWING TITLE:  
**Electrical  
Power Plan**

DRAWING NO.: **E.100**



**DRAWING NOTES**

1. ALL EMERGENCY BATTERY LIGHTING AND EXIT SIGNS SHALL BE CONNECTED TO LOCAL LIGHTING CIRCUIT, AHEAD OF ANY SWITCHING. (TYPICAL)
2. ALL LIGHTING CIRCUITRY SHALL EMANATE FROM EXISTING PANEL TP-A.

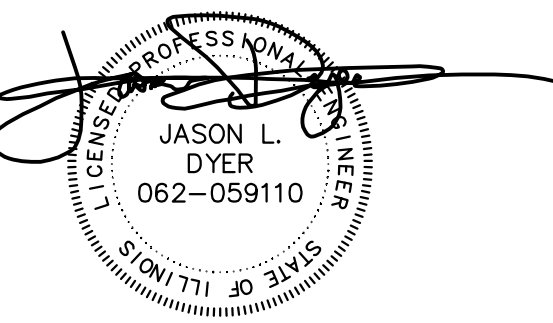


01 ELECTRICAL LIGHTING PLAN  
SCALE: 1/4" = 1'-0"



Trusted Engineering  
Mechanical, Electrical, Plumbing  
Engineering and Consulting  
T (630) 936-4700  
2625 Butterfield Rd, Suite 138 S  
Oak Brook, IL, 60523  
www.trustedengineering.com  
I.P.D.F. # 184-005121  
EXP. 04/30/2017

I hereby certify that these plans were prepared by me, or under my direct supervision and control, and to the best of my knowledge, comply with all applicable codes.



DRAWINGS SIGNED 02/16/17

Jason L. Dyer, P.E.  
Illinois Professional Engineer  
Registration Number:  
062059110  
License Expires: 11/30/2017

I, THE ENGINEER, HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME, OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE, COMPLY WITH ALL APPLICABLE CODES. WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF THE ENGINEER.

REISSUED FOR PERMIT	2017-02-16
ISSUED FOR PERMIT	2016-12-23
ISSUE	DATE

PROJECT NAME:  
**@Properties  
Offices**

PROJECT NO. 201621  
OWNER: @Properties  
ADDRESS: 1314 Shermer Rd  
Northbrook, IL 60062

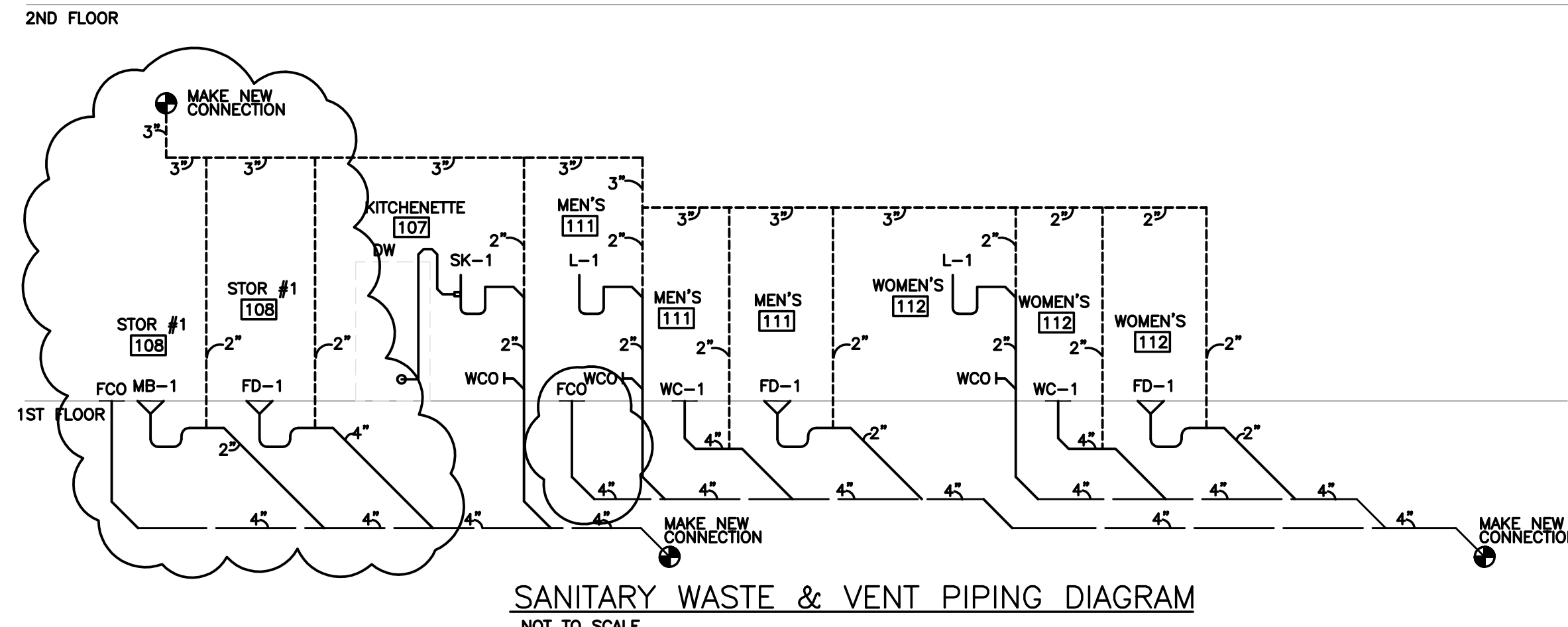
DRAWING TITLE:  
**Electrical  
Lighting Plan**

DRAWING NO.: **E.200**

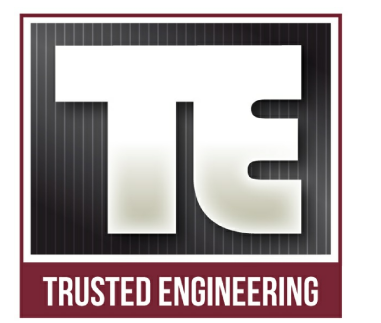
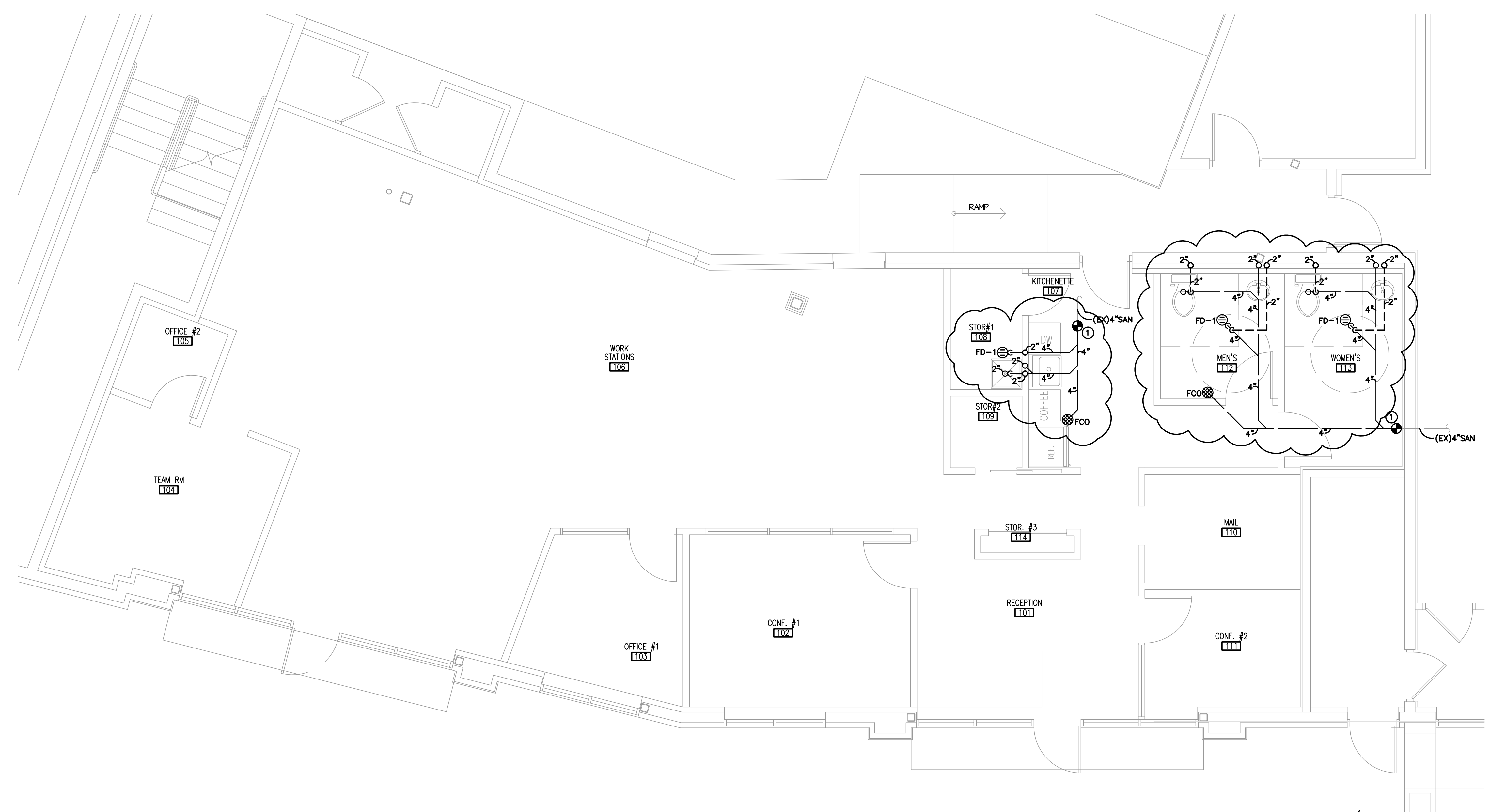






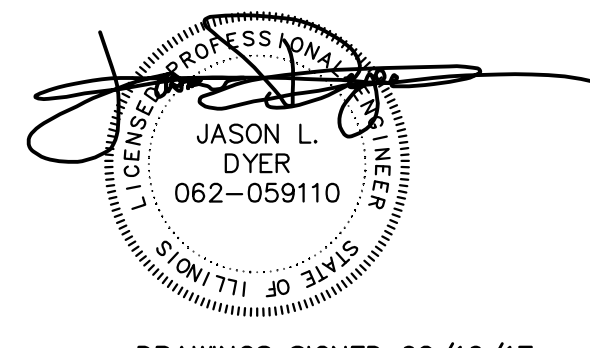


**PLUMBING DRAWING KEYNOTES**  
 ① MAKE NEW CONNECTION TO EXISTING 4" UNDERGROUND SANITARY SEWER. VERIFY EXACT SIZE, LOCATION, INVERT, DIRECTION OF FLOW AND REQUIREMENTS IN FIELD AND PRIOR TO BID.



Mechanical, Electrical, Plumbing  
 Engineering and Consulting  
 T (630) 936-4700  
 2625 Butterfield Rd, Suite 138 S  
 Oak Brook, IL, 60523  
 www.trustedengineering.com  
 I.P.D.F. # 184-005121  
 EXP. 04/30/2017

I hereby certify that these plans were prepared by me, or under my direct supervision and control, and to the best of my knowledge, comply with all applicable codes.



DRAWINGS SIGNED 02/16/17  
 Jason L. Dyer, P.E.  
 Illinois Professional Engineer  
 Registration Number:  
 062059110  
 License Expires: 11/30/2017

REISSUED FOR PERMIT	2017-02-16
ISSUED FOR PERMIT	2016-12-23
ISSUE	DATE

PROJECT NAME:  
**@Properties  
 Offices**

PROJECT NO. 201621  
 OWNER: @Properties  
 ADDRESS: 1314 Shermer Rd  
 Northbrook, IL 60062

DRAWING TITLE:  
**UNDERGROUND  
 PLUMBING PLAN**

DRAWING NO.: **P.100**

THESE PLANS ARE THE PROPERTY OF TRUSTED ENGINEERING AND CONSULTING. ANY REPRODUCTION OR DISTRIBUTION OF THESE PLANS WITHOUT THE WRITTEN PERMISSION AND CONSENT OF TRUSTED ENGINEERING AND CONSULTING IS STRICTLY PROHIBITED. TRUSTED ENGINEERING AND CONSULTING SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE OR LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO, DAMAGES, LOSSES, OR INJURIES, ARISING FROM THE USE OF THESE PLANS. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL INFORMATION PROVIDED TO TRUSTED ENGINEERING AND CONSULTING. TRUSTED ENGINEERING AND CONSULTING SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE OR LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO, DAMAGES, LOSSES, OR INJURIES, ARISING FROM THE USE OF THESE PLANS. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL INFORMATION PROVIDED TO TRUSTED ENGINEERING AND CONSULTING.

SCALE 1/32"=1'-0"

SCALE 1/16"=1'-0"

SCALE 1/8"=1'-0"

SCALE 1/4"=1'-0"

SCALE 1/2"=1'-0"

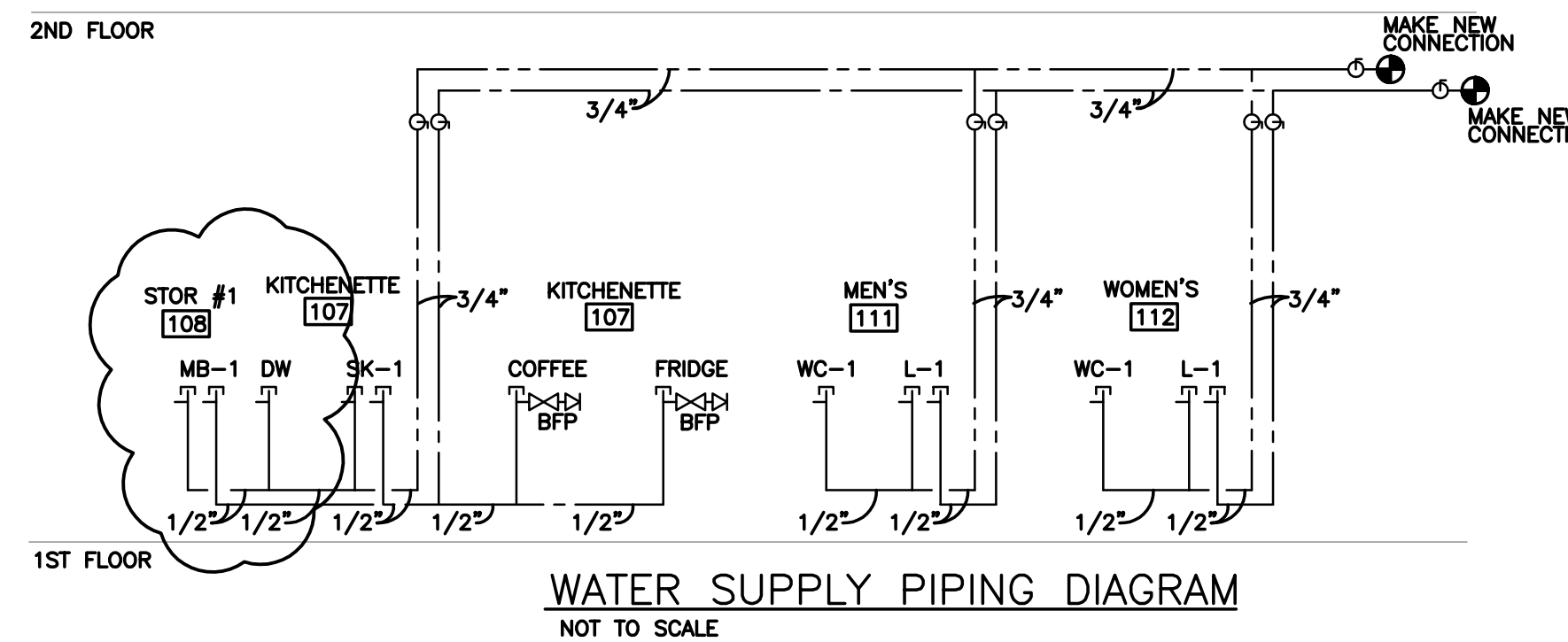
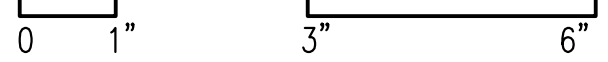
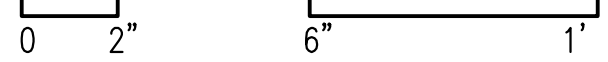
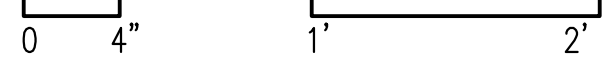
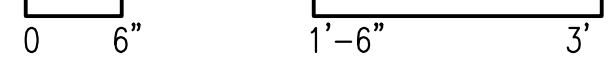
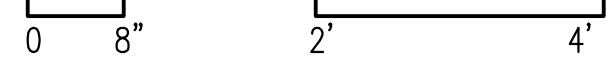
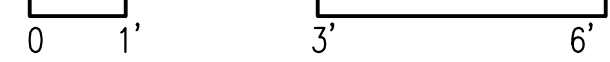
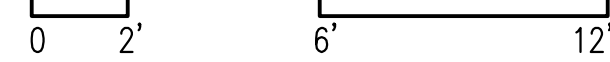
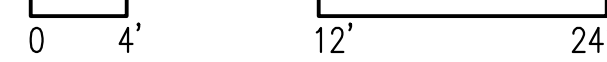
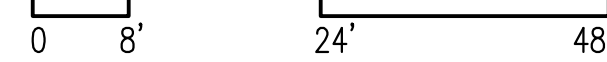
SCALE 3/4"=1'-0"

SCALE 1"=1'-0"

SCALE 1-1/2"=1'-0"

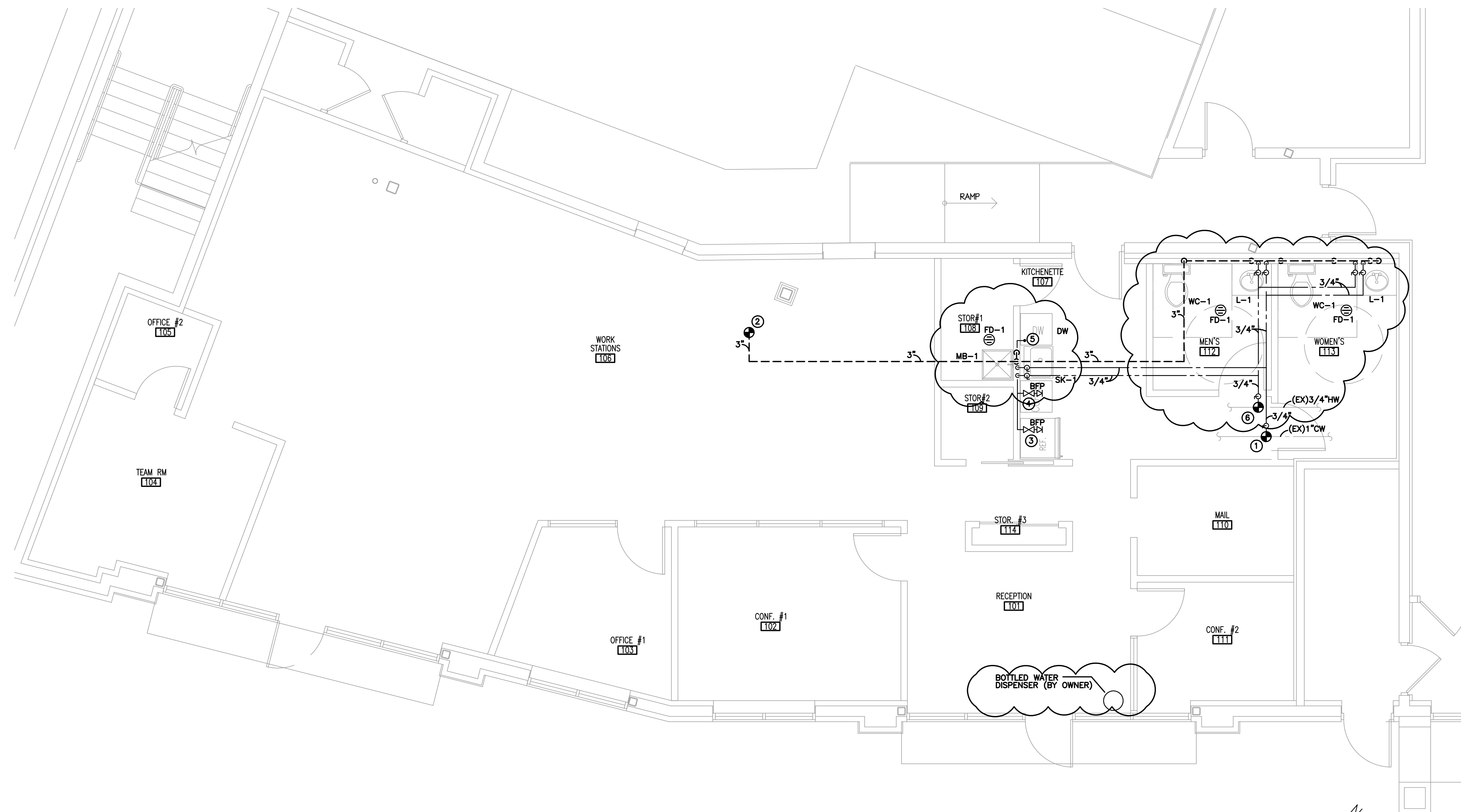
SCALE 3"=1'-0"

SCALE 6"=1'-0"

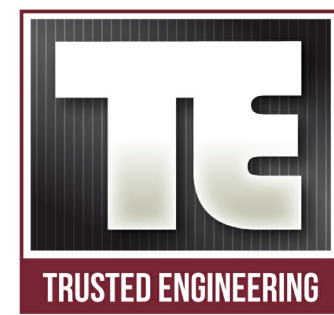


### PLUMBING DRAWING KEYNOTES

- ① MAKE NEW CONNECTION TO EXISTING 1" OLD WATER STUB VALVED AND CAPPED AT CEILING. VERIFY EXACT SIZE, LOCATION AND REQUIREMENTS IN FIELD AND PRIOR TO BID.
- ② MAKE NEW CONNECTION TO EXISTING 3" VENT STUB AT CEILING. VERIFY EXACT SIZE, LOCATION AND REQUIREMENTS IN FIELD AND PRIOR TO BID.
- ③ FURNISH 1/2" CW TO ANGLE STOP WITH DUAL CHECK BACKFLOW PREVENTER FOR CONNECTION TO REFRIGERATOR ICE MAKER CONNECTION.
- ④ FURNISH 1/2" CW TO ANGLE STOP WITH DUAL CHECK BACKFLOW PREVENTER FOR COFFEE BREWER CONNECTION.
- ⑤ FURNISH 1/2" HOT WATER TO ANGLE STOP FOR DISHWASHER CONNECTION. ROUTE FLEXIBLE WASTE FROM DISHWASHER UP TO UNDERSIDE OF FLOOD LEVEL RIM OF ADJACENT SINK AND MAKE PROPER CONNECTION TO HOUSE SIDE OF SINK P-TRAP USING PROPER DISHWASHER CONNECTOR.
- ⑥ MAKE NEW CONNECTION TO EXISTING 3/4" HOT WATER STUB VALVED AND CAPPED AT CEILING. VERIFY EXACT SIZE, LOCATION AND REQUIREMENTS IN FIELD AND PRIOR TO BID.

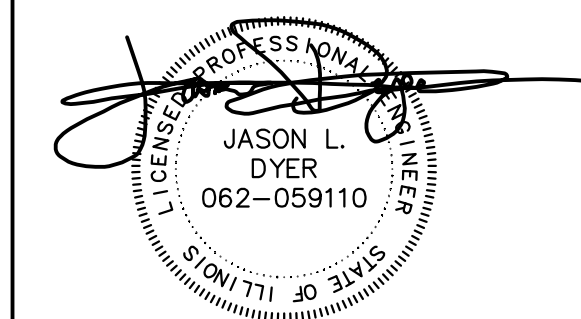


01 PLUMBING ABOVE GROUND PLAN  
SCALE: 1/4" = 1'-0"



Mechanical, Electrical, Plumbing  
Engineering and Consulting  
T 630)936-4700  
2625 Butterfield Rd, Suite 138 S  
Oak Brook, IL, 60523  
www.trustedengineering.com  
I.P.D.F. # 184-005121  
EXP. 04/30/2017

I hereby certify that these plans were prepared by me, or under my direct supervision and control, and to the best of my knowledge, comply with all applicable codes.



DRAWINGS SIGNED 02/16/17

Jason L. Dyer, P.E.  
Illinois Professional Engineer  
Registration Number:  
062059110  
License Expires: 11/30/2017

REISSUED FOR PERMIT	2017-02-16
ISSUED FOR PERMIT	2016-12-23
ISSUE	DATE

PROJECT NAME:

## @Properties Offices

PROJECT NO. 201621

OWNER: @Properties

ADDRESS: 1314 Shermer Rd  
Northbrook, IL 60062

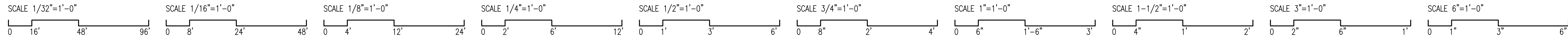
DRAWING TITLE:

### ABOVE GROUND PLUMBING PLAN

DRAWING NO.:

# P.101





**PLUMBING FIXTURES & EQUIPMENT SCHEDULE**

- WC-1 ADA, TWO PIECE, FLOOR MOUNTED, WHITE, VITREOUS CHINA, TANK TYPE WATER CLOSET WITH 16-3/4" HIGH ELONGATED BOWL, 12" ROUGH-IN, CHINA BOLT CAPS, 1.6 GPF, 3" FLUSH VALVE AND 2-1/8" TRAPWAY; MANSFIELD "SUMMIT" 384-386  
WHITE, ANTIMICROBIAL, ELONGATED, OPEN FRONT SOLID PLASTIC TOILET SEAT WITH STAINLESS STEEL, SELF SUSTAINING & EXTERNAL CHECK HINGES, BEMIS #215SSCC  
CHROME PLATED BRASS LOOSE KEY STOP WITH FULL TURN BRASS STEM, WALL ESCUTCHEON, 1/2" INLET & 3/8" OUTLET; BRASSCRAFT #SCR19C. RIGID CHROME PLATED COPPER TOILET RISER TUBE W/ GASKET NOSEPIECE; BRASSCRAFT #1-12DL C
- L-1 ADA, 20-5/16 x 14-3/16 INCH, RECTANGLE, UNDERMOUNT, WHITE, VITREOUS CHINA, UNDER COUNTER LAVATORY WITH CONCEALED FRONT OVERFLOW, MANSFIELD "BRENTWOOD" #234  
CHROME PLATED, CAST BRASS LAVATORY FAUCET WITH 4" CTRS, SINGLE ADA COMPLIANT HANDLE, CERAMIC CARTRIDGE, TEMPERATURE LIMIT STOP AND NON-SPLASH VANDAL RESISTANT SPRAY OUTLET, MOEN COMMERCIAL #8430 SERIES  
FURNISH (2) CHROME PLATED BRASS LOOSE KEY STOPS WITH FULL TURN BRASS STEM, WALL ESCUTCHEON, 1/2" INLET & 3/8" OUTLET; BRASSCRAFT #SCR19C. RIGID CHROME PLATED COPPER FAUCET RISER TUBE W/ INSERT; BRASSCRAFT #1-12A C  
ASSE 1070 CERTIFIED, UNDER COUNTER THERMOSTATIC MIXING VALVE WITH SOLID BRASS BODY, STAINLESS STEEL INTERNAL COMPONENTS & STRAINER, 1/2" FNPT CONNECTIONS, INTEGRAL CHECKS AND VANDAL RESISTANT LOOKING NUT; MOEN COMMERCIAL #104451  
WHITE, ADA-COMPLIANT, ANTIMICROBIAL, 1/8" THICK MOLDED VINYL UNDERSINK SAFETY COVERS WITH BUILT-IN FASTENERS, OFFSET TAILPIECE COVER, (2) ANGLE STOP COVERS & (2) SUPPLY COVERS; TRUEBRO "LAV GUARD 2" #103-E-Z FURNISH 1-1/2" CHROME PLATED TUBULAR BRASS P-TRAP ASSEMBLY WITH WALL ESCUTCHEON AND EXTENSION TUBE MFG'D BY DEARBORN BRASS.
- SK-1 ADA COMPLIANT, 28" x 18" x 5-1/2" DEEP, 18 GAUGE, TYPE 304 STAINLESS STEEL, UNDERMOUNT SINK WITH UNDERCOATING, 3-1/2" STAINLESS STEEL CRUMB CUPS AND DRAIN, 1-1/2" CHROME PLATED CAST BRASS P-TRAP; BLANCO "STELLAR" #441559  
ADA COMPLIANT, CHROME PLATED BRASS, DECK MOUNTED BAR SINK FAUCET ON 8" CENTERS WITH 1/4" TURN CERAMIC DISC CARTRIDGES, ADA COMPLIANT WRIST BLADE HANDLES, GOOSE-NECK SPOUT AND VANDAL RESISTANT NON-SPLASH AERATOR SPRAY OUTLET, MOEN COMMERCIAL #8287  
FURNISH (2) CHROME PLATED BRASS LOOSE KEY STOPS WITH FULL TURN BRASS STEM, WALL ESCUTCHEON, 1/2" INLET & 3/8" OUTLET; BRASSCRAFT #SCR19C. RIGID CHROME PLATED COPPER FAUCET RISER TUBE W/ INSERT; BRASSCRAFT #1-12A C  
ASSE 1070 CERTIFIED, UNDER COUNTER THERMOSTATIC MIXING VALVE WITH SOLID BRASS BODY, STAINLESS STEEL INTERNAL COMPONENTS & STRAINER, 1/2" FNPT CONNECTIONS, INTEGRAL CHECKS AND VANDAL RESISTANT LOOKING NUT; MOEN COMMERCIAL #104451
- MB-1 24" x 24" x 10" HIGH FLOOR MOUNTED, MOLDED STONE SERVICE BASIN WITH CHROME PLATED STRAINER, INTEGRAL MOLDED DRAIN WITH SEAL AND BUMPER GUARDS, E.L. MUSTEE "DURASTONE" #63M CHROME PLATED, CAST BRASS, WALL MOUNT, TWO HANDLE SERVICE SINK FAUCET WITH INTEGRAL VACUUM BREAKER, INTEGRAL CHECK STOPS TO ELIMINATE THERMAL CROSSOVER, PAIL HOOK, WALL BRACE AND THREADED HOSE END SPOUT. MOEN COMMERCIAL "M-DURA" #8230.

**PLUMBING SYMBOLS**

NOT ALL SYMBOLS MAY APPLY

- EXISTING COLD WATER PIPING
- EXISTING UNDERGROUND SEWER
- EXISTING SUSPENDED SEWER
- EXISTING VENT PIPING
- COLD WATER PIPING (INSULATED)
- HOT WATER PIPING (INSULATED)
- UNDERGROUND SEWER
- SUSPENDED SEWER
- VENT PIPING
- UNION
- PIPE CAPPED
- PIPE CONTINUATION
- PIPE DROP (ELBOW)
- PIPE UP/RISER (ELBOW)
- P-TRAP
- PIPE UP/RISER (TEE)
- PIPE DROP (TEE)
- CO CLEANOUT PLUG (SIOUX CHIEF #875-2P/877/876)
- WCO WALL CLEANOUT PLUG (SIOUX CHIEF #870/873/877/876)
- FCO FLOOR CLEANOUT (SIOUX CHIEF #834)
- FD-1 FLOOR DRAIN (FINISHED FLR AREA) (SIOUX CHIEF #832 OR 833)
- GV GATE VALVE (NIBCO OR EQUAL)
- BV BALL VALVE (NIBCO OR EQUAL)
- CV CHECK VALVE (NIBCO OR EQUAL)
- BFP DUAL CHECK BACKFLOW PREVENTERS  
- USE WATTS #7 FOR ICE & COFFEE MAKERS  
- USE WATTS #9BD FOR CARBONATORS/SODA DISP. (S.S. W/ ATMOSPHERIC PORT)
- NEW CONNECT TO EXISTING
- SAN INDICATES SANITARY SEWER
- (EX) INDICATES EXISTING

**PLUMBING ENERGY NOTES**

- 1) PROVIDE HEAT TRAPS IN COMPLIANCE WITH IECC 404.3 ON CW SUPPLY TO WATER HEATER & HW OUTLET (HEAT TRAP NIPPLE, U-FLEX CONNECTOR & FABRICATED RETURN BEND).
- 2) PROVIDE AUTOMATIC TIME SWITCHES TO TURN HOT WATER RECIRCULATION PUMPS OFF WHEN IT IS NOT IN USE. FOR AUTOMATIC-CIRCULATING HOT WATER SYSTEM, HWS AND HWR PIPING SHALL BE INSULATED PER IECC 404.4 W/ 1" OF INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 (BTU PER INCH/H x FT2 x F)
- 3) PROVIDE AUTOMATIC VENT OR FLUE DAMPERS FOR ALL FUEL FIRED WATER HEATERS.
- 4) ALL WATER HEATERS TO BE ENERGY EFFICIENT (STAND-BY HEAT LOSS & FUEL EFFICIENCY).
- 5) INSULATE AT LEAST THE FIRST 8'-0" OF PIPE ON NON-CIRCULATED COMMERCIAL WATER HEATERS.

**FIXTURE UNIT CALCULATIONS**

FIXTURE TYPE	QTY.	C.W.S.F.U.	H.W.S.F.U.	T.H.W.S.F.U.	T.W.S.F.U.	TOTAL	D.F.U.	TOTAL
WATER CLOSET (TANK TYPE)	2	3	--	--	3	6	4	8
LAVATORY	2	1.5	1.5	3	2	4	2	4
FLOOR DRAIN - (4")	2	--	--	--	--	--	6	12
BREAK ROOM SINK	1	1.5	1.5	1.5	2	2	2	2
DISHWASHER	1	--	1	1	1	1	2	2
MOP BASIN	1	2.25	2.25	2.25	3	3	3	3
TOTALS	7			7.75		16		31
		(W/O FD'S)		REQ'D CONN.	3/4"HW	3/4"CW		4" SAN

**PLUMBING NOTES**

- 1.) ALL CLEANOUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. THE CONTRACTOR SHALL COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT CABINETS, ETC. PROVIDE FULL SIZED CLEANOUTS ON STRAIGHT RUN INTERVALS NOT TO EXCEED FIFTY (50') AS WELL AS AT EACH CHANGE OF DIRECTION GREATER THAN (60'). FIXTURE TRAPS (I.E. FLOOR DRAINS) SHALL NOT CONSTITUTE CLEANOUT ACCESS POINTS IF A CABLE MUST MAKE TWO (2) OR MORE RIGHT ANGLE TURNS IN ORDER TO ENTER THE MAIN DRAIN OR STACK.
- 2.) ALL PLUMBING FIXTURE VENTS SHALL TERMINATE A MINIMUM OF 12" FROM ANY VERTICAL SURFACE AND 12'-0" HORIZONTALLY FROM ANY OUTSIDE FRESH AIR INTAKE OR A MINIMUM OF 24" ABOVE FRESH AIR IN-TAKES IF THE 12'-0" HORIZONTAL SEPERATION IS NOT POSSIBLE.
- 3.) INSTALL FULL-PORT SHUT-OFF VALVES ON ALL HOT & COLD WATER SUPPLY LINES TO ALL FIXTURE OR APPLIANCE GROUPS/AREAS. ALL VALVES SHALL BE FULL LINE SIZED FOR THE BRANCH THEY SERVE. LOCATE VALVES IN AN ACCESSIBLE AREA OR PROVIDE ACCESS PANEL IN UNACCESSIBLE CEILING/WALL AREAS. ALL NEWLY INSTALLED BRASS SHUT-OFF VALVES FOR POTABLE WATER SHALL COMPLY WITH 1417 (a) 1 OF THE 2014 SWDA.
- 4.) PROVIDE 18" (MINIMUM) LONG AIR CHAMBERS ON ALL WATER SUPPLY LINES TO FIXTURES AND EQUIPMENT. PROVIDE WATER HAMMER ARRESTORS AT ALL FIXTURES WITH QUICK-CLOSING VALVES/FAUCETS. PROVIDE AIR GAPS FOR INDIRECT DRAINS AS REQUIRED BY CODE. AIR GAP SHALL BE 2 TIMES THE DIAMETER OF THE INDIRECT DRAIN.
- 6.) PROVIDE DI-ELECTRIC UNIONS, COUPLINGS, ADAPTORS OR FLANGES AT ALL TRANSITIONS OF FERROUS PIPING TO NON-FERROUS PIPING.
- 7.) PROVIDE NON-REMOVABLE/INTEGRAL VACUUM BREAKER (Ø 7"-8" A.F.F.) ON ALL NEW/EXIST. MOP BASIN FAUCETS & ALL OTHER NEW/EXISTING THREADED HOSE OUTLETS, HOSE BIBBS AND WALL HYDRANTS.
- 8.) COORDINATE ROUTING OF ALL PIPING SYSTEMS TO AVOID DUCTWORK, ELECTRICAL CONDUIT, BEAMS AND OTHER STRUCTURAL MEMBERS.
- 9.) PROVIDE APPROVED BACKFLOW PREVENTION DEVICE ON ALL WATER SUPPLY LINES TO SODA DISPENSERS, COFFEE MAKERS, CAPPUCCINO MAKERS, CARBONATORS, ICE MACHINES, HUMIDIFIERS, BOILER MAKE-UP AND SANITIZING CHEMICAL FEED CONNECTIONS. PER LOCAL CODE REQUIREMENTS & EQUI./FIXTURE MFR'S REQUIREMENTS. LOCATE IN AN ACCESSIBLE AREA. COORDINATE ALL MAKE-UP/HUMIDIFIER CONNECTIONS W/ MECHANICAL CONTRACTOR.
- 10.) PROVIDE VALVE STEM EXTENSIONS AS REQUIRED FOR ALL INSULATED WATER SUPPLY PIPING.
- 11.) PROVIDE GROUTING/CAULKING WHERE FIXTURES MEET WALLS, FLOORS, COUNTERTOPS, ETC.
- 12.) PROVIDE ADA-COMPLIANT FLUSH VALVE HANDLES/TRIP LEVERS THAT ACTIVATE W/ 5 FOOT POUNDS OF PRESSURE OR LESS FORCE. LOCATE ALL WATER CLOSET FLUSH VALVE HANDLES/TRIP LEVERS ON WIDE SIDE OF STALLS.
- 13.) ROUTE CIRCULATING HOT WATER DISTRIBUTION MAINS WITHIN 25 FEET (MINIMUM) OF EACH FIXTURE. PROVIDE CIRCUIT SETTER BALANCING/COMPENSATING FLOW CONTROL VALVES FOR BALANCING CONTROL IN ACCESSIBLE LOCATIONS (PROVIDE ACCESS PANEL AS REQUIRED). INSULATE ALL RE-CIRCULATION PIPING PER ENERGY NOTE #2.
- 14.) ALL EXPOSED WASTE PIPING LOCATED IN TOILET ROOMS SHALL BE CHROME PLATED BRASS WITH MATCHING STOPS AND ESCUTCHEONS. PROVIDE LOOSE KEY TYPE STOPS IN ALL PUBLIC AREAS OR WHERE VANDAL RESISTANT INSTALLATIONS ARE REQUIRED. ALL RISER TUBES SHALL BE RIGID CHROME PLATED COPPER.
- 15.) PROVIDE PROTECTIVE INSULATED PIPE COVERS ON P-TRAPS, ANGLE STOPS, OFFSET TAILPIECES, RISER SUPPLY TUBES, ETC. FOR ALL ADA ACCESSIBLE FIXTURES.
- 16.) PROVIDE A.S.S.E. 1070 APPROVED THERMOSTATIC MIXING VALVE TO SUPPLY 110 DEGREE (MAX) HOT WATER AT TIME OF INSTALL/INSPECTION TO ALL PUBLIC & ADA ACCESSIBLE LAVS/HAND SINKS. PROVIDE 110 DEGREE (MAX) HOT WATER TO ALL PUBLIC & ADA SHOWERS. PROVIDE 140 DEGREE HW TO ALL FIXTURES USED FOR SANITIZING/CLEANING.
- 17.) PROVIDE A VACUUM RELIEF VALVE ON ALL ELEVATED OR BOTTOM FED WATER HEATERS IN ADDITION TO A TEMPERATURE & PRESSURE RELIEF VALVE.
- 18.) OUTLET TEMPERATURE ON ALL WATER HEATERS SHALL BE SET AT 135 (MINIMUM) AND THERMOSTATICALLY MIXED DOWN AT POINTS INDICATED ON PLANS.
- 19.) ALL BACKFLOW PREVENTION DEVICES SHALL BE TESTED IN-LINE AND APPROVED BY A CROSS-CONNECTION CONTROL DEVICE INSPECTOR BEFORE BEING PLACED INTO SERVICE. BACKFLOW PREVENTERS SHALL BE TESTED AND MAINTAINED AT LEAST ANNUALLY BY A CROSS-CONN. CONTROL DEVICE INSPECTOR AND RECORDS TO VERIFY TESTING AND MAINTENANCE SHALL BE AVAILABLE AT THE SITE OF THE INSTALLATION OF THE DEVICE. BACKFLOW PREVENTERS SHALL NOT BE INSTALLED MORE THAN 5'-0" ABOVE THE FLOOR. PROVIDE A PROTECTIVE STRAINER UPSTREAM OF ALL BACKFLOW PREVENTERS UNLESS THE DEVICE CONTAINS A BUILT-IN STRAINER. ALL BFP'S SHALL BE INSTALLED BY A ILLINOIS LICENSED PLUMBER.
- 20.) PLUMBING CONTRACTOR TO COORDINATE EXACT SIZE AND LOCATION OF EACH FLUE/VENT FOR EACH GAS-FIRED WATER HEATER. COORDINATE WITH MECHANICAL CONTRACTOR AND VERIFY ADEQUATE CHASE/CHIMNEY SPACE WITH ARCHITECT PRIOR TO START OF CONSTRUCTION.
- 21.) FURNISH FIRE RATED PIPE SLEEVE OR FIRE CAULKING ON ALL PIPE PENETRATIONS THROUGH FIRE RATED WALLS/FLOORS.
- 22.) ALL THERMAL EXPANSION TANKS SHALL BE PROPERLY SIZED FOR THE WATER HEATER IT SERVES AND CHARGED TO THE INLET PRESSURE OF THE COLD WATER SUPPLY TO THE WATER HEATER. THE THERMAL EXPANSION TANK SHALL ALSO BE SIZED IN ACCORDANCE WITH THE WATER HEATER INPUT AND THE BTU/H RATING OF THE TEMPERATURE & PRESSURE RELIEF VALVE.
- 23.) PROVIDE APPROVED AIR GAP FITTING PROTECTION AT DISHWASHER DISCHARGE INTO SANITARY SYSTEM. PROVIDE PROPER BFP ON WATER SUPPLY IF CHEMICAL FEEDS ARE USED.
- 24.) PROVIDE SIOUX CHIEF "PRIME PERFECT" TRAP PRIMERS FOR ALL FLOOR DRAINS NOT RECEIVING DISCHARGE ON A REGULAR BASIS FROM WATER SUPPLIED FIXTURES OR EQUIPMENT.
- 25.) SAWCUT EXISTING FLOOR AND WALL CONSTRUCTION AS REQUIRED IN ORDER TO ACCOMMODATE NEW WASTE, VENT AND WATER SUPPLY PIPING. PATCH ALL NEW WORK TO MATCH EXISTING CONSTRUCTION. DEMOLITION OF ALL PLUMBING WASTE LINES SHALL NOT RESULT IN DEAD ENDS GREATER THAN 10'-0" IN LENGTH AND ALL WATER SUPPLY PIPING DEAD ENDS SHALL NOT EXCEED 2'-0" IN LENGTH.
- 26.) PLUMBING CONTRACTOR TO VERIFY ALL EXISTING WASTE, VENT AND WATER SUPPLY PIPING WHERE NEW CONNECTIONS ARE TO BE MADE PRIOR TO BID. VERIFY EXACT SIZE, LOCATION, INVERT, CONDITION AND REQUIREMENTS IN FIELD. REPORT ANY MAJOR DISCREPANCIES TO ARCHITECT/ENGINEER IMMEDIATELY.

**PLUMBING SPECIFICATIONS**

THE PLUMBING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE STATE OF ILLINOIS PLUMBING CODE 2014 AND ALL LOCAL CODES, AMMENDMENTS & ORDINANCES OF THE VILLAGE/CITY OF NORTHBROOK, IL. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL PLANS & SPECIFICATIONS TO DETERMINE THE EXACT SCOPE OF WORK. ALL EXISTING SITE CONDITIONS SHALL BE FIELD VERIFIED BY THE PLUMBING CONTRACTOR AS REQUIRED PRIOR TO PLUMBING BID. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL FAILURES TO RECOGNIZE REQUIRED PLUMBING WORK AT HIS OWN EXPENSE.

PLUMBING CONTRACTOR SHALL MAKE ALL REQUIRED CONNECTIONS AS INDICATED ON THE PLUMBING DRAWINGS.

CONTRACTOR SHALL CLEAN AND REMOVE ALL UNUSED MATERIAL AND CONSTRUCTION DEBRIS FROM JOB SITE AND CLEAN ALL PLUMBING FIXTURES, EQUIPMENT AND FLOOR DRAINS.

ALL PLUMBING WORK SHALL BE SUBJECT TO OWNER'S ACCEPTANCE AND APPROVAL UNDER THIS CONTRACT. ALL PLUMBING SYSTEMS SHALL BE INSTALLED IN A PROFESSIONAL MANNER. ALL PLUMBING SYSTEMS SHALL BE TESTED, CLEANED AND ADJUSTED PER CODE AND AS REQUIRED UPON COMPLETION OF WORK. COORDINATE THE INSTALLATION OF ALL PLUMBING SYSTEMS WITH OTHER TRADES TO MAINTAIN PROPER CLEARANCES AND UTILIZE/CONSOLIDATE PIPING TO COMMON PIPE RACKING SYSTEMS, ETC.

**PIPING INSULATION**  
1/2" THICK FIBER GLASS FOR ALL COLD WATER SUPPLY PIPING 1-1/2" DIA. OR LESS. 1" THICK FIBER GLASS ALL CW PIPING 2" AND LARGER. PROVIDE PROPER MOLDED FITTINGS, JACKETS, VAPOR BARRIER TAPE, ALL JOINTS. INSULATE ALL ROOF DRAIN BODYS AND ALL HORIZONTAL STORM PIPING BACK TO DOWNSPOUT. PIPE COVERING TO BE SHALL BE 3 1/2 LB. DENSITY 1-1/2" THICK FIBER GLASS W/MOLDED FITTINGS, BUTT JOINTS & VAPOR BARRIER.

ALL PLUMBING EQUIPMENT START-UPS SHALL BE INCLUDED UNDER PLUMBING CONTRACT TO ENSURE PROPER OPERATION.

ALL WATER PIPING SHALL BE TESTED WITH WATER UNDER PRESSURE OF 100 PSI FOR 10 MINUTES, AND MADE TIGHT AT THIS PRESSURE.

ALL SOIL, WASTE AND VENT PIPING SHALL BE SUBJECTED TO A HYDROSTATIC TEST OF NOT LESS THAN 10 FEET OF WATER COLUMN FOR 15 MINUTES BEFORE INSPECTION STARTS AND PROVEN TIGHT.

ALL DOMESTIC WATER SUPPLY PIPING SHALL BE CHLORINATED FOR A 24 HR PERIOD AND THEN FLUSHED PRIOR TO TURNING SYSTEM OVER TO BUILDING OWNER.

**PIPING MATERIALS**  
ALL BELOW GROUND WASTE & VENT PIPING SHALL BE SERVICE WEIGHT CAST IRON OR SCHEDULE 40 PVC (ONLY WHERE LOCAL CODE PERMITS). 4" DIA. MIN FOR ALL UNDERGROUND WASTE PIPING. ALL BELOW GROUND WATER PIPING SHALL BE TYPE "K" COPPER AND ABOVE GROUND TYPE "L" COPPER (2" & SMALLER). WATER SUPPLY PIPING 3" & LARGER SHALL BE DUCTILE IRON. ALL VENT PIPING 2" AND SMALLER SHALL BE TYPE "M" COPPER. ALL VENT PIPING 3" AND LARGER SHALL BE SERVICE WEIGHT CAST IRON. (SCHEDULE 40 PVC IS ACCEPTABLE FOR ABOVE GROUND D.W.V. SYSTEMS IN NON-PLENUM CEILING ONLY AND IF ACCEPTABLE BY LOCAL CODES).

A (1) YEAR SERVICE CONTRACT FROM DATE OF ACCEPTANCE/COMPLETION OF WORK ON ALL PLUMBING EQUIPMENT INSTALLED SHALL BE INCLUDED IN THIS CONTRACT.

**SPRINKLER SPECIFICATIONS**

THE GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ISSUED BY THE ARCHITECT SHALL GOVERN WHERE APPLICABLE.

THIS CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS AT THE JOB SITE BEFORE SUBMITTING BID. FAILURE TO RECOGNIZE WORK REQUIRED SHALL BE AT THE EXPENSE OF THIS CONTRACTOR. NO CONSIDERATION SHALL BE GIVEN FOR ADDITIONAL COMPENSATION AFTER THE LETTING OF BIDS.

ENTIRE INSTALLATION SHALL BE PERFORMED IN A FIRST-CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEMS SHALL BE FULLY OPERATIONAL; ACCEPTANCE BY THE OWNER SHALL BE A CONDITION WITH OTHER TRADES IN ORDER TO AVOID INTERFERENCES. PRESERVE MAXIMUM HEADROOM AND AVOID OMISSIONS. PROVIDE PROPER STANDPIPE SYSTEMS IN ALL STAIRWELLS AND A 2HR RATING (MINIMUM) ON FIRE PUMP/SPRINKLER SERVICE ROOM.

CONTRACTOR TO MAKE ALL NECESSARY TAPS, AS CALLED FOR ON THE DRAWINGS.

THIS CONTRACTOR SHALL REMOVE ALL DEBRIS ON COMPLETION OF THE JOB AND CLEAN ALL FIXTURES.

IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO START-UP, ADJUST AND CHECK FOR PROPER OPERATION, ALL EQUIPMENT INSTALLED UNDER THIS CONTRACT.

THIS CONTRACTOR SHALL ALLOW IN HIS INITIAL BID THE COST OF SERVICE ON ALL EQUIPMENT INSTALLED UNDER HIS CONTRACT FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL INSPECTION OF THE WORK.

THIS CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ ENGINEER, OWNERS INSURANCE UNDERWRITER, AND LOCAL FIRE DEPARTMENT FOR APPROVAL. COMPLETE INSTALLATION AND DESIGN DRAWINGS SHOWING THE SPRINKLER SYSTEM LAYOUTS. THE LAYOUT SHALL INDICATE ALL OF THE SPRINKLER PIPING, SPRINKLER HEAD LOCATIONS AND DETAILS OF ANCHORS AND SUPPORTS AS REQUIRED.

THE SPRINKLER SYSTEM SHALL BE LAID OUT TO ELIMINATE ALL CONFLICTS BETWEEN THE SPRINKLER SYSTEM AND THE STRUCTURE INCLUDING THE MECHANICAL AND ELECTRICAL SYSTEMS AS THEY ARE SHOWN ON THE CONTRACT DRAWINGS.

THE LAYOUT SHALL INDICATE COORDINATION BETWEEN SUCH ITEMS AS DUCTWORK, LIGHTS, STRUCTURAL MEMBERS, ETC. PIPE FOR ABOVE GRADE SHALL BE NEW SCHEDULE 40 FOR BRANCHES AND SCHEDULE 10 FOR MAINS. STANDARD WEIGHT STEEL DESIGNED FOR 175 LB. WORKING PRESSURE, CONFORMING TO A.S.A. B36.10 MANUFACTURED IN THE U.S.

**SPRINKLER PIPING MATERIALS (SUBURBS)**  
SPRINKLER PIPING SHALL BE BLAZEMASTER CPVC FIRE SPRINKLER PIPE/FITTINGS & EXTRUDED/MOLDED FROM CPVC COMPOUNDS MFG'D BY LUBRIZOL ADVANCED MATERIALS. THE PIPE/FITTING COMPOUNDS SHALL MEET CELL CLASS 23547/24447, RESPECTIVELY, AS DEFINED BY ASTM D1784, & SHALL BE CERTIFIED BY NSF INTL. FOR USE W/ POTABLE WATER. BOTH PIPE/FITTING COMPOUNDS SHALL BE PRESS. RATED BY PLASTICS PIPE INSTITUTE (PPI). PIPE SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM F442 IN STD. DIMENSION RATIO (SDR)13.5. FITTINGS SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM F437 (SCHEDULE 80 THREADED), ASTM F438 (SCHEDULE 40 SOCKET) AND ASTM F439 (SCHEDULE 80 SOCKET). PIPE/FITTINGS SHALL BE LISTED BY "UL" FOR USE IN WET AUTOMATIC FIRE SPRINKLER SYSTEMS & SHALL BEAR THE LOGO OF THE LISTING AGENCY. SEE UL FIRE PROTECTION EQUIPMENT DIRECTORY, CATEGORIES WMT AND HFTH. ANCILLARY PRODUCTS COMING INTO CONTACT WITH PIPE AND FITTINGS MUST BE CHEMICALLY COMPATIBLE AS DETERMINED BY CPVC PIPE & FITTINGS MFG OR COMPOUND MFG, AND THIS LISTED ON PIPE, FITTINGS OR COMPOUND MFG'S CHEMICAL COMPATIBILITY PROGRAM (I.E. FGG/BM/CZ SYSTEM COMPATIBLE PROGRAM).

THE SPRINKLER RISERS, MAINS AND BRANCH PIPING SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE, USING APPROVED TYPE STEEL HANGERS, BRACKETS, ANCHORS AND STUDS, OF SIZE AND NUMBER IN ACCORDANCE WITH N.F.P.A. #13.

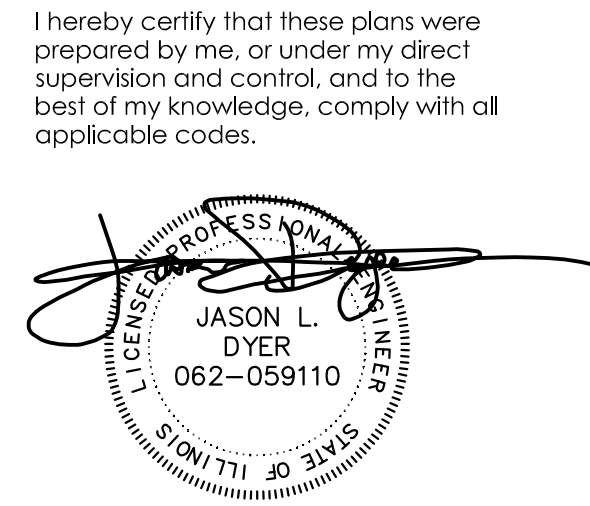
THE SPRINKLER SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH PAMPHLET 13 OF THE NATIONAL FIRE PROTECTION ASSOCIATION AND ALL REQUIREMENTS OF THE LOCAL FIRE DEPARTMENT AND OWNER'S INSURANCE UNDERWRITER. ALL PIPING ABOVE GRADE SHALL BE HYDROSTATICALLY TESTED AT 200 PSIG FOR A TWO-HOUR PERIOD IN ACCORDANCE WITH N.F.P.A. #24.

CONTRACTOR IS RESPONSIBLE FOR MODIFYING/ADJUSTING EXISTING SPRINKLER LOCATIONS, TYPE AND ASSOCIATED BRANCH PIPING AS REQUIRED IN ORDER TO ACCOMMODATE NEW CEILING LAY-OUT. CONTRACTOR IS RESPONSIBLE FOR SPACING, PIPE SIZE, OFFSETS, CLEARANCES, VALVES, ELBOWS, HANGERS, ALL ACCESSORIES AND QUANTITIES FOR ALL.

THIS CONTRACTOR SHALL DESIGN AND INSTALL A COMPLETE SPRINKLER SYSTEM PER NFA AND LOCAL CODES AND FURNISH HYDRAULIC CALCULATIONS.



Mechanical, Electrical, Plumbing Engineering and Consulting  
T.630)936-4700  
2625 Butterfield Rd, Suite 138 S  
Oak Brook, IL, 60523  
www.trustedengineering.com  
I.P.D.F. # 184-005121  
EXP. 04/30/2017



DRAWINGS SIGNED 02/16/17  
Jason L. Dyer, P.E.  
Illinois Professional Engineer  
Registration Number:  
062059110  
License Expires: 11/30/2017

REISSUED FOR PERMIT	2017-02-16
ISSUED FOR PERMIT	2016-12-23
ISSUE	DATE

PROJECT NAME:  
**@Properties Offices**

PROJECT NO. 201621  
OWNER: @Properties

ADDRESS: 1314 Shermer Rd  
Northbrook, IL. 60062

**DRAWING TITLE:  
PLUMBING NOTES, SCHEDULES & DETAILS**

DRAWING NO: **P.200**