SECTION 15400 – PLUMBING
PART 1 – GENERAL

1.01 GENERAL CONDITIONS

THE GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS AND DIVISION 1, ARE A PART OF THIS SECTION AND THE CONTRACT FOR THIS WORK AND SHALL APPLY TO THIS SECTION AS FULLY AS IF REPEATED HEREIN.

1.02 SCOPE OF WORK

FURNISH ALL LABOR, MATERIALS, EQUIPMENT, APPLIANCES AND NECESSARY INCIDENTALS FOR THE COMPLETE INSTALLATION OF ALL PLUMBING AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN.

A. WORK SPECIFIED IN THIS SECTION
1. SANITARY SOIL, WASTE AND VENT SYSTEMS.
2. DOMESTIC HOT AND COLD WATER SYSTEMS.
3. DOMESTIC WATER HEATERS.
4. FURNISH AND SET ALL SLEEVES FOR PIPES PASSING THROUGH WALLS AND FLOORS.
5. PIPE COVERING, INSULATION AND WRAPPING.
6. EXCAVATION AND BACKFILL.
7. ROUGH-IN AND FINAL CONNECTIONS TO AIR CONDITIONING EQUIPMENT OF CONDENSATE DRAINS.
8. ALL PLUMBING FIXTURES, WATER HEATERS, VALVES, AND OTHER MISCELLANEOUS ITEMS OR EQUIPMENT REQUIRED FOR A COMPLETE INSTALLATION.

1.03 QUALITY ASSURANCE

A. CODES AND STANDARDS
1. ALL ITEMS INDICATED ON SITE, ARCHITECTURAL OR MECHANICAL DRAWINGS ARE TO BE PROVIDED COMPLETE FROM POINT OF CONNECTION TO FINISHED FIXTURE IN CONFORMANCE WITH ALL GOVERNING AUTHORITY REQUIREMENTS. NOTHING IN THESE DRAWINGS OR SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT WORK IN VIOLATION OF GOVERNING CODES.
2. IN ADDITION TO THE REQUIREMENTS OF ALL GOVERNING CODES, ORDINANCES AND AGENCIES, CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES AND STANDARDS:
a. 2006 INTERNATIONAL PLUMBING CODE.
b. 2006 INTERNATIONAL BUILDING CODE.
c. 2006 INTERNATIONAL MECHANICAL CODE.
d. 2006 INTERNATIONAL ENERGY CONSERVATON CODE.

1.04 PRODUCT HANDLING

A. PROTECTION: TAKE ALL PRECAUTIONS NECESSARY TO PROTECT THE MATERIALS OF THIS SECTION BEFORE, DURING AND AFTER INSTALLATION.

B. REPLACEMENTS: IN THE EVENT OF DAMAGE, IMMEDIATELY REPAIR ALL DAMAGED AND DEFECTIVE WORK TO THE APPROVAL OF THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.

1.05 SUBMITTALS

A. MANUFACTURER'S LITERATURE: WITHIN 35 DAYS AFTER AWARD OF CONTRACT AND BEFORE ANY OF THE MATERIALS OF THIS SECTION ARE DELIVERED TO THE JOB SITE, SUBMIT SEVEN COMPLETE BROCHURES OF ALL MATERIALS AND EQUIPMENT, PER DIVISION 1 OF THE SPECIFICATIONS.

B. OTHER SUBMITTALS:
1. SHOP DRAWINGS.
2. STERILIZATION TEST REPORT.
3. TEST DATA.

SETS IN BOUND BOOKLET FORM OF WRITTEN OPERATING AND MAINTENANCE INSTRUCTIONS AND BROCHURES FOR EQUIPMENT SPECIFIED IN THIS SECTION. FULLY INSTRUCT OWNER'S OPERATING PERSONNEL.

C. RECORD DRAWINGS: KEEP AN ACCURATE DIMENSIONED RECORD OF AS-BUILT LOCATIONS AND ELEVATIONS, AS REFERRED TO APPROVED BASE DATUM, OF BURIED CONCEALED.

D. OPERATION AND MAINTENANCE INSTRUCTIONS: DELIVER TO ARCHITECT TWO COMPLETE LINES, MANHOLE, CLEANOUTS, VALVES, PLUGGED TEES, CAPPED ENDS, AND OF WORK WHICH IS INSTALLED DIFFERENT FROM SHOWN IN THE PLANS.

1.06 MISCELLANEOUS

A. EXAMINATION OF THE SITE: EXERCISE CARE IN EXAMINING THE SITE AND COORDINATE ALL WORK INDICATED ON THE DRAWINGS WITH EXISTING CONDITIONS. REPORT TO ARCHITECT IN WRITING CONDITIONS THAT WILL PREVENT PROPER PROVISIONS OF THIS WORK. VERIFY DEPTH AND LOCATION OF ALL SERVICE LINES WITH SERVICING COMPANIES HAVING JURISDICTION BEFORE EXCAVATING. BY SUBMISSION OF THE BID, THE CONTRACTOR WARRANTS THAT HE HAS HAS FAMILIARIZED HIMSELF WITH THE EXISTING CONDITIONS AND WILL PERFORM ALL WORK AS REQUIRED FOR HOOKUP AND AS REQUIRED BY THE CONTRACT DOCUMENTS AT NO ADDITIONAL.

B. PERMITS AND FEES: ARRANGE AND PAY FOR ALL PERMITS, INSPECTIONS AND FEES REQUIRED BY ALL GOVERNING AGENCIES.

C. SERVICE CONNECTIONS: MAKE ALL NECESSARY ARRANGEMENTS WITH APPLICABLE UTILITY COMPANY FOR CONNECTION TO EXISTING SERVICE LINES. PAY ALL FEES ASSOCIATED WITH WORK INCLUDING METERS, HOOKUP CHARGE AND UTILITY ASSESSMENT FEES.

D. DRAWINGS: COORDINATE ALL SPACE REQUIREMENTS WITH OTHER TRADES. DRAWINGS INDICATE DESIRED LOCATION AND ARRANGEMENT OF PIPING, EQUIPMENT, AND OTHER ITEMS AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE.

E. ALL GAS FIRED EQUIPMENT SHALL INCLUDE A LABEL INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE ALTITUDE WHEREIN THE PROJECT IS TO BE LOCATED. THE APPLIANCE SHALL ALSO INCLUDE A COMPLIANCE STATEMENT INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE PROPER OPERATION AT THE ALTITUDE OF THE PROJECT AND SHALL BE LISTED CAPABLE FOR USE WITH NATURAL GAS OR PROPANE GAS IF PROPANE IS LISTED ON THE DRAWINGS.

PART 2 – PRODUCTS

2.01 GENERAL

A. PIPE SLEEVES AND WRAPPING: PROVIDE POLISHED CHROMIUM PLATED AND BRASS SET SCREW FLANGES WHERE PLUMBING PIPING PASS THROUGH WALLS, FLOORS, CEILINGS, AND PARTITIONS IN FINISHED PORTIONS OF BUILDING INCLUDING FLANGES ON PIPES AT FIXTURES. ALL SLEEVES IN CONCEALED AND EXTERIOR WALLS SHALL BE 20 GA. GALVANIZED IRON ONE INCH O.D. LARGER THAN THE PIPE, CAULKED IF BELOW GRADE IN A MOISTUREPROOF MANNER. ALL PIPES PENETRATING THROUGH FIRE WALLS AND FLOORS SHALL BE PROPERLY SAFED WITH DOW CORNING 3-6548 SILICONE RTV FOAM OR EQUAL. INSTALL PER MANUFACTURE'S DIRECTION.

B. PIPE IDENTIFICATION:
1. PIPING IDENTIFICATION PER ANSI AND OSHA STANDARDS: EACH INDIVIDUAL PIPELINE SHALL BE MARKED FOR QUICK AND EASY IDENTIFICATION AS TO CONTENTS AND CHARACTER OF MATERIAL CARRIED IN THE PIPES BY SET ON SNA OR STR MARKER.
2. MARKERS SHALL BE INSTALLED AND SPACED AT NOT MORE THAN 8 FT. INTERVALS AND SO LOCATED THAT MARKERS SHALL BE VISIBLE WHERE PIPING SYSTEM IS EXPOSED.
3. COLOR SCHEME SHALL BE APPROVED. BASE COLOR FOR MARKERS SHALL BE AS FOLLOWS:

DOMESTIC HOT WATER –	YELLOW
DOMESTIC COLD WATER –	GREEN
SANITARY SEWER –	GREEN
SANITARY VENT –	GREEN
CONDENSATE DRAIN –	BLUE

C. ONE MARKER SHALL BE INSTALLED AT EACH SIDE OF VALVES, SPECIAL FITTINGS AND AT BRANCH TAKE-OFF. IN FURRED SPACES INSTALL ONE BAND 2 FT. ABOVE FLOOR AND 19 IN. BELOW CEILING LINE.

D. MATERIALS: MATERIALS WHEN NOT OTHERWISE DEFINITELY SPECIFIED SHALL CONFORM TO THE APPLICABLE ASTM, ASME, AGA, AND ASA STANDARDS.

E. ALL GAS FIRED EQUIPMENT SHALL INCLUDE A LABEL INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE ALTITUDE WHEREIN THE PROJECT IS TO BE LOCATED. THE APPLIANCE SHALL ALSO INCLUDE A COMPLIANCE STATEMENT INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE PROPER OPERATION AT THE ALTITUDE OF THE PROJECT AND SHALL BE LISTED CAPABLE FOR USE WITH NATURAL GAS OR PROPANE GAS IF PROPANE IS LISTED ON THE DRAWINGS.

2.02 PIPE AND FITTING SCHEDULE

PIPE AND FITTINGS:

A. NO PIPE OF A FOREIGN MANUFACTURER WILL BE ACCEPTABLE.

B. ALL PIPING, FITTINGS, FLANGES, ETC. SHALL BE FREE FROM DEFECTS AND SHALL COMPLY WITH THE APPROPRIATE ASTM SPECIFICATIONS.

C. BLACK STEEL PIPE: ASTM A53 ERW GRADE B, STANDARD WEIGHT (SCHEDULE 40) OR EXTRA STRONG (SCHEDULE 80) AS SPECIFIED.

D. COPPER TUBING: ASTM B88, TYPE L OR K AS SPECIFIED.

E. PVC PIPE AND FITTINGS: ASTM D1785 CLASS 150 WITH ASTM D 2853 SOLVENT CEMENT JOINTS UNLESS OTHERWISE SPECIFIED. SCHEDULE 40. PVC PLASTIC PIPE FITTINGS: ASTM F 628, SCHEDULE 40.

F. ACRYLONITRILE BUTADIENE STYRENE (ABS) PLASTIC PIPE: ASTM D 2661, SCHEDULE 40, ASTM F 628, SCHEDULE 40. ABS PLASTIC PIPE FITTINGS: ASTM F 409, ACCESSIBLE AND REPLACEABLE, SOLVENT CEMENT AND THREADED TYPES, DRAIN PATTERN.

G. CAST IRON SOIL PIPE AND FITTINGS: ASTM A74

H. WELDED BLACK STEEL FITTINGS: ASTM A234 GRADE B, 150-POUND FOR STANDARD WEIGHT PIPING, 300-POUND FOR EXTRA STRONG PIPING, OR OF WEIGHT OR SCHEDULE OF MATCHING PIPING.

I. THREADED MALLEABLE IRON FITTINGS: ANSI B16.3, 150-POUND FOR STANDARD WEIGHT PIPING, 300-POUND FOR EXTRA STRONG PIPING, OR OF WEIGHT OR SCHEDULE OF MATCHING PIPING EITHER BLACK OR GALVANIZED TO MATCH PIPING.

J. WELDED FLANGES: ASTM A181 GRADE B, 150-POUND FOR STANDARD WEIGHT PIPING, 300-POUND FOR EXTRA STRONG PIPING OR OF EQUAL WEIGHT OF CONNECTED EQUIPMENT.

K. COPPER FITTINGS: WROUGHT COPPER, ANSI SPECIFICATION B16.22.

L. BALL VALVES, DOMESTIC WATER: BRONZE, FULLPORT, CLASS 150, THREADED. GRINNELL 3750 OR 171N NIBCO T-585 JAMESBURY 300

M. PARTITION STOP VALVES: T&S B415, LOOSE KEY TYPE WITH WALL FLANGE.

N. BALANCING COCKS 2 INCHES AND SMALLER SHALL BE CRANE NO 250 OR MILWAUKEE BUTTERBALL BB2-100 OR BB2-350 WITH MEMORY STOP.

O. SOLDER:
O.1. JOINTS IN COPPER PIPING ABOVE GRADE SHALL BE STAY SAFE 50 SOLDER OR 95-5 SOLDER SHALL BE SILFOS OR SILVERFLOW FOR ALL REFRIGERANT PIPING JOINTS.

P. DOMESTIC HOT WATER, HOT WATER RETURN, AND COLD WATER PIPING SHALL BE TYPE L OR K HARD TEMPERED COPPER PIPE WITH WROUGHT-COPPER FITTINGS USING 95-5 SOLDER. PEX TUBE PIPING MAY BE USED IN LIEU OF COPPER ON SIZES 2-INCHES AND SMALLER. WHERE PIPING IS EXPOSED OUTSIDE OF PARTITIONS, USE TYPE L OR K HARD COPPER TUBING AND WROUGHT COPPER FITTINGS

Q. DOMESTIC HOT AND COLD WATER PIPING BURIED BELOW GRADE SHALL BE TYPE K SOFT TEMPERED (ANNEALED) COPPER WITHOUT FITTINGS OR JOINTS AND COVERED WITH IMCOA IMCOSHIELD UNICELLULAR INSULATION. PEX TUBE PIPING MAY BE USED IN LIEU OF COPPER ON SIZES 2-INCHES AND SMALLER.

R. ALL SOIL, WASTE, VENT, ROOF DRAIN AND ROOF DRAIN OVERFLOW PIPING SHALL BE ABS OR PVC PLASTIC PIPE, RATED FOR DOMESTIC WASTE AND VENT, WITH ABS OR PVC PLASTIC SOCKET TYPE DRAIN, WASTE AND VENT PATTERN FITTINGS. SOLVENT CEMENTED JOINTS. INSTALL ABS DRAINAGE PIPE AND FITTINGS ACCORDING TO ASTM D2661. INSTALL PVC DRAINAGE PIPE AND FITTINGS ACCORDING TO ASTM F891.

2.03 ROOF FLASHING

SANITARY VENT FLASHINGS: SEMCO 1100-3 OR 1100-5, WITH ONE-PIECE LEAD FLASHING AND COUNTERFLASHING SLEEVE.

2.04 PIPE SLEEVES

AT CONCRETE WALLS OR FLOORS, ADJUST-TO-CRETE, PARAMOUNT, HOLE-OUT OR SPERZEL CRETESLEEVE FLOOR SLEEVES SHALL EXTEND TO TOP OF CONCRETE CURBS FOR PIPING RISING THROUGH FLOORS . WALL SLEEVES SHALL BE FLUSH WITH FINISHED SURFACE. SLEEVES SHALL BE SIZED TO ALLOW 1/2 IN. CLEARENCE AROUND PIPE INSULATION. INSULATION AND COVERING SHALL BE CONTINUOUS THROUGH WALL AND FLOOR SLEEVES.

2.05 CLEANOUTS

A. FULL SIZE CLEANOUTS SHALL BE INSTALLED AT THE BASE OF EACH SOIL WASTE STACK. ALL OTHER CLEANOUTS SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS AND WHERE REQUIRED BY STATE, LOCAL OR NATIONAL PLUMBING CODES.

B. ALL CLEANOUTS SHALL BE INSTALLED IN LOCATIONS EASILY ACCESSIBLE FOR RODDING. CLEANOUTS IN WALLS SHALL BE JR SMITH 4402, IN FLOORS JR SMITH 4023. CLEANOUTS SHALL BE JR SMITH, ZURN, WADE, OR JOSAM.

2.06 PIPE INSULATION

A. ALL DOMESTIC HOT WATER AND COLD WATER PIPING SHALL BE COVERED WITH OWENS CORNING ASJ-25 FIBERGLASS PIPE INSULATION WITH VAPOR SEAL JACKET. INSULATION THICKNESS SHALL BE 1/2 INCH FOR COLD WATER AND 1 INCH FOR HOT WATER.

B. INSULATE ALL PIPING UNDER LAVATORIES ACCESSIBLE TO THE PHYSICALLY HANDICAPPED WITH HOT WATER SUPPLY AND 'P' TRAP PREFABRICATED INSULATION, HANDI LAV GUARD.

2.07 PIPE HANGERS

HANGERS SHALL BE SUPPLIED WITH FACTORY INSTALLED ISOLATION AND DI-CHROMATE FINISH.

PIPE 2 IN. AND SMALLER: GRINNEL F69. PIPE 2-1/2 IN. AND LARGER: GRINNEL F65. CONCRETE INSERTS: GRINNEL 281 ANAD 282. RISER CLAMPS FOR COPPER PIPING: GRINNEL 261P, PLASTIC COATED. RISER CLAMPS FOR OTHER PIPING: GRINNERL 261.

HANGER RODS SHALL CONFORM TO THE FOLLOWING: PIPE SIZE 2 IN. AND SMALLER: 3/8 IN. RODS. PIPE SIZE 2-1/2 IN. AND 3 IN.: 1/2 IN. RODS. PIPE SIZE 3 IN. AND LARGER: 5/8 IN. RODS.

2.08 POINT OF USE INSTANTANEOUS WATER HEATER WITH MICROPROCESSOR TEMPERATURE CONTROLLER

THE POINT-OF-USE WATER HEATER SHALL BE A CHRONOMITE LABORATORIES INSTANT-TEMP MICROPROCESSOR TEMPERATURE CONTROLLED ELECTRIC TANKLESS WATER HEATER, WITH CELCON WATERWAYS AND STAINLESS STEEL HEATING COILS. HOT WATER STORAGE VESSELS ARE EXPRESSLY PROHIBITED. WATER HEATER TO BE FACTORY SET TO 110° F. WATER HEATER TO BE CHRONOMITE OR EEMAX, NO EXCEPTION.

2.09 PLUMBING FIXTURES

DF-1
ELECTRIC WATER COOLER: ELKAY MODEL EHFA-8 WALL MOUNT WHEEL CHAIR MODEL, PUSH BAR ON THE FRONT, CAPACITY OF 7.6 GPH OF 50 DEGREE WATER WITH 70 DEGREE ROOM AIR, WITH P-TRAP AND C.P. SUPPLY AND STOP. COLOR BY ARCHITECT. 115/60/1 (4.8 FLA, 390 WATTS, 1/5 HP COMPRESSOR.COOLERS SHALL BE ELKAY, OASIS OR HAWS.

FD-1
FLOOR DRAIN: SMITH 2005-A WITH 5" DIAMETER NICKEL BRONZE STRAINER WITH 2" #7221 CAST IRON P-TRAP. DRAINS SHALL BE SMITH, ZURN, WATTS, WADE OR MIFAB. FLOOR DRAINS SHALL BE FURNISHED WITH CLAMPING COLLARS WHERE A WATERPROOF MEMBRANE IS PROVIDED. MEMBRANES WILL BE REQUIRED FOR ALL DRAINS INSTALLED ABOVE GRADE. PROVIDE TRAP PRIMER TAPPING ON P-TRAPS.

HB-1
HOSE BIBB: CHICAGO NO, 387, 3/4" SIZE, POLISHED CHROME PLATED CASING, HOSE END, LOOSE KEY AND E-27 VACUUM BREAKER.

HY-1
WATER HAMMER ARRESTOR: SMITH FIGURE 5010 "HYDROTROL", RATED AT 12-32 F.U., SMITH FIGURE 5020 "HYDROTROL", RATED AT 33-60 F.U., SMITH FIGURE 5030 "HYDROTROL", RATED AT 61-113 F.U. OR SMITH FIGURE 5040 "HYDROTROL", RATED AT 114-154 F.U.. DETERMINE THE FIXTURE UNITS FOR THE PLUMBING EQUIPMENT AND INSTALL THE ARRESTOR RATED FOR THE FIXTURE UNITS. LOCATE WHERE SHOWN ON THE PLANS OR AT THE END OF DOMESTIC COLD WATER LINES SERVING A SET OF WATER CLOSETS OR URINALS.

L-1
LAVATORY (WALL HUNG, ADA): KOHLER #K-2005 "KINGSTON" VITREOUS CHINA, 21"X18" FOR CONCEALED ARMS, MOEN CHÂTEAU FAUCET MODEL L4621BC, METAL CONSTRUCTION, BRUSHED CHROME FINISH, PIVOT ACTION LEVER HANDLE WITH AERATOR, 1-1/4" C.P. CAST BRASS "P-TRAP EBC: TB-125Z & EBC: LA-16-K C.P. PIPES AND STOPS, WITH #700 SMITH CONCEALED ARM SUPPORT, HEIGHT SET BY ARCHITECT. COVER ALL EXPOSED PIPING WITH LIGHT GRAY "HANDI-LAV GUARD" PROTECTOR TO MEET ADA REQUIREMENTS.

QC-1
AIR OUTLET COUPLER: FOR COMPRESSED AIR, QUICK COUPLER FOR MOUNTING 1/2-INCH AIR LINE, SIMILAR TO GRAYES 202-437.

TD-1
TRENCH DRAIN: ZURN FLO-THRU MODEL Z886-CG. CHANNELS SHALL BE 80" LONG, 6" WIDE, AND HAVE A 4" WIDE THROAT. MODULAR CHANNEL SECTIONS SHALL BE MADE OF HIGH DENSITY POLYTHYLENE (HDPE), HAVE INTERLOCKING ENDS, AND RADIUSED BOTTOM. CHANNELS SHALL BE PROVIDED EITHER FLAT (NEUTRAL) OR WITH A .75% BUILT-IN SLOPE. CHANNELS SHALL BE AVAILABLE WITH INVERTS RANGING FROM 3.5" TO 12.50". CHANNELS SHALL HAVE CLIPS MOLDED INTO THE SIDES OF THE CHANNEL TO ACCOMMODATE VERTICAL REBAR FOR POSITIONING AND ANCHORING PURPOSES. END CAPS AND CATCH BASINS SHALL BE AVAILABLE TO COMPLEMENT THE CHANNELS AND GRATES. END OUTLETS, BOTTOM OUTLETS, AND SIDE OUTLETS SHALL BE AVAILABLE IN 2", 3", 4", AND 6" DIAMETERS.

TP-1
TRAP PRIMER: PRECISION PLUMBING PRODUCTS INC MODEL P1-500 PRESSURE ACTUATED AUTOMATIC TRAP PRIMER, WITH DY-2, 3 OR 4 DISTRIBUTION HEADER FOR 2 OR 3 DRAINS. RUN 3/8" WATER PIPING TO P-TRAP. PROVIDE TRAP PRIMER TAPPING ON FLOOR DRAINS. INSTALL ABOVE CEILING.

TS-1
TUB SINK: UTILATUB LAUNDRY/UTILITY TUB MODEL 19F, AS MANUFACTURED BY E.L. MUSTEE & SONS, INC. TUB SHALL BE ONE-PIECE MOLDED CONSTRUCTION USING STRUCTURAL THERMOPLASTIC WITH MATCHED METAL MOLDS UNDER EXTREME HEAT AND PRESSURE. TUB TO INCLUDE INTEGRALLY MOLDED DRAIN ASSEMBLY, STOPPER AND FLOOR MOUNTING HARDARE. CHICAGO 895 GN2A E3 317 GOOSENECK FAUCET WITH AERATOR AND WRIST BLADE HANDLES, ANGLE SUPPLIES, P-TRAP, FLEXIBLE SUPPLIES WITH STOPS. TUB SINK SHALL BE MUSTEE OR APPROVED EQUAL. OWNER TO MAKE FINAL SELECTION OF PLUMBING FIXTURE AND COLOR.

U-1
URINAL (WALL HUNG) (ADA): KOHLER #K-5016-T "DEXTER", VITREOUS CHINA 1.0 GAL. FLUSH, SIPHON JET, 3/4" TOP SPUD, ZURN SR-6003XL-WS1 BATTERY POWERED, SENSOR ACTUATED, C.P. FLUSH VALVE. CHROME PLATED METAL HOUSING FOR SENSOR AND BATTERIES: SCRATCH RESISTANT, TEMPERED-GLASS REPLACEABLE LENS, SWITCHABLE FEATURES, INCLUDING ON/OFF 24 HOUR AUTO FLUSH, DIAPHRAGM OPERATED, SCREW DRIVER STOP WITH VANDAL RESISTANT COVER. SMITH 0637 URINAL SUPPORT. SEE ARCHITECT FOR MOUNTING HEIGHTS.

WC-1
WATER CLOSET (ADA, FLOOR, TANK TYPE): KOHLER #K3493 HIGHLINE, VITREOUS CHINA, WITH K4670-C OPEN FRONT SEAT, STAINLESS STEEL HINGE POSTS WITH CHECK, BRASSCRAFT C.P. SUPPLY PIPE WITH STOP. WATER CLOSETS SHALL BE KOHLER, AMERICAN STANDARD, OR ELJER. OWNER TO MAKE FINAL SELECTION OF PLUMBING FIXTURE. PLUMBING EQUIPMENT MUST BE APPROVED BY THE OWNER.

SUPPLIES AND STOPS SHALL BE FROST, BRASSCRAFT, KOHLER, EASTMAN, US BRASS, ROVERT MFG OR EQUAL. P-TRAPS SHALL BE FROST, KOHLER, SANITARY DASH OR EQUAL.

ALL FIXTURES SHALL BE CAULKED TO THE FLOOR OR WALL WITH WATER RESISTANT WHITE BUTYL RUBBER CAULKING COMPOUND. TRIM FOR ALL FIXTURES SHALL BE CHROME PLATED AND ALL TRIM SHALL MATCH IN DESIGN. SUPPLY FAUCETS SHALL HAVE RENEWABLE SEATS AND BARRELS.

FIXTURES SHALL BE THE WATER SAVER TYPE WITH MAXIMUM USAGE OF 1.6 GALLONS PER FLUSH FOR WATER CLOSETS, 2.5 GALLONS PER MINUTE FOR SHOWERS, 3.0 GALLONS PER MINUTE FOR SERVICE SINKS, 1.0 GALLONS PER MINUTE FOR URINALS, 0.5 GALLONS PER MINUTE FOR LAVATORIES AND 2.0 GALLONS PER MINUTE FOR SINKS..

PART 3 – EXECUTION

3.01 SURFACE CONDITIONS

A. INSPECTION: ALL PLUMBING SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES, THE ORIGINAL DESIGN, AND THE REFERENCED STANDARDS.

B. DISCREPANCIES
1. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE ARCHITECT.
2. DO NOT PROCEED WITH INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.
3. INTERFERENCES BETWEEN INSTALLED WORK OF VARIOUS TRADES DUE TO LACK OF COORDINATION SHALL BE RESOLVED BY ARCHITECT WHOSE DECISION IS FINAL. RELOCATE OR OFFSET ANY WORK AS REQUIRED TO ACCOMMODATE WORK OF OTHER TRADES AT NO EXTRA COST TO THE OWNER WHEN SO DIRECTED BY THE ARCHITECT.

3.02 LOCATIONS AND SPACE REQUIREMENTS

A. CONTRACTOR SHALL FULLY INFORM HIMSELF REGARDING PECULIARITIES AND LIMITATIONS OF SPACES AVAILABLE FOR INSTALLATION OF WORK UNDER THIS DIVISION. DRAWINGS INDICATE DESIRED LOCATION AND ARRANGEMENT OF PIPING, EQUIPMENT AND OTHER ITEMS, AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE. WORK SPECIFIED AND NOT CLEARLY DEFINED BY DRAWINGS SHALL BE INSTALLED AND ARRANGED IN A SATISFACTORY MANNER. IN ANY CASE AND AT ANY TIME, A CHANGE IN LOCATION REQUIRED BY OBSTACLES OR THE INSTALLATION OF OTHER TRADES NOT SHOWN ON THE MECHANICAL PLANS SHALL BE MADE BY CONTRACTOR WITHOUT ADDITIONAL CHARGE PROVIDED THE CHANGE IS ORDERED BEFORE WORK IS INSTALLED AND NO EXTRA MATERIALS ARE REQUIRED.

B. VERIFY ALL SPACES, DIMENSIONS FOR ALL FIXTURES, EQUIPMENT, OR OWNER-FURNISHED EQUIPMENT AND EQUIPMENT FURNISHED UNDER OTHER SECTIONS.

C. OBTAIN ALL NECESSARY ROUGH IN DATA AND DIMENSIONS FOR ALL FIXTURES, EQUIPMENT, OR OWNER-FURNISHED EQUIPMENT AND EQUIPMENT FURNISHED UNDER OTHER SECTIONS.

D. MAINTAIN AMPLE HEADROOM CLEARANCES AND ACCESSIBILITY. MAINTAIN CEILING HEIGHTS.

E. CONSTANTLY CHECK WORK OF OTHER TRADES TO PREVENT INTERFERENCE WITH THIS INSTALLATION.

3.03 EXCAVATION AND BACKFILLING

PERFORM EXCAVATION AND BACKFILLING REQUIRED WORK UNDER THIS SECTION UNLESS OTHER-WISE SPECIFIED. CONFORM TO REQUIREMENTS OF DIVISION 2, SOILS REPORT AND OF PUBLIC AUTHORITIES HAVING JURISDICTION.

3.04 SPECIALTY ITEMS

INSTALL AS INDICATED ON THE DRAWINGS, AS HEREIN SPECIFIED, AND AS RECOMMENDED BY MANUFACTURER.

3.05 STERILIZATION

STERILIZE EACH UNIT OF WATER SUPPLY AND DISTRIBUTION SYSTEM WITH LIQUID CHLORIDE OR HYDROCHLORIDE BEFORE ACCEPTANCE FOR OPERATION IN ACCORDANCE WITH AWWA C601, "STANDARD FOR DISINFECTING WATER MAINS" WORK SHALL BE DONE BY CONTRACTOR AND, UNLESS OTHERWISE REQUIRED BY PUBLIC AUTHORITIES HAVING JURISDICTION, SHALL CONFORM TO THE FOLLOWING:

A. MATERIALS
1. LIQUID CHLORINE: U.S. ARMY SPECIFICATION 4-1, 2. HYDROCHLORIDE: LIQUID SHALL CONFORM TO FED. SPEC. O-C-11RA (INT. 4).

B. METHOD: AMOUNT OF CHLORINE SHALL PROVIDE A DOSAGE OF 50 PPM MINIMUM. INTRODUCE CHLORINATING MATERIALS INTO LINES AND DISTRIBUTION SYSTEM IN APPROVED MANNER. AFTER A CONTACT PERIOD OR 24 HOURS MINIMUM DURING WHICH PERIOD CHLORINE RESIDUAL SHALL BE MAINTAINED AT 5 PPM MINIMUM, FLUSH OUT SYSTEMS WITH CLEAN WATER UNTIL RESIDUAL CONTENT IS NOT GREATER THAN 0.2 PPM. FLUSH ENTIRE SYSTEM OPEN AND CLOSE VALVES IN LINES BEING STERILIZED SEVERAL TIMES DURING CONTACT PERIOD.

C. TEST REPORTS: FURNISH ONE COPY OF TEST REPORT OF COMPLETE AND ADEQUATE STERILIZATION TO ARCHITECT BEFORE FINAL ACCEPTANCE OF WORK. CERTIFICATES SHALL BEAR SIGNATURE OF AN OFFICIAL OF LABORATORY RESPONSIBLE FOR TEST. COST OF TESTING LABORATORY SERVICES SHALL BE INCLUDED IN THIS SUBCONTRACT.

3.06 ADJUSTING

UPON COMPLETION OF WORK AND AFTER CLEANING OF SYSTEM, FIXTURES AND EQUIPMENT, AND AUTOMATIC PARTS OF PLUMBING SYSTEM SHALL BE CAREFULLY ADJUSTED NORMAL OPERATION. ALL FLUSH VALVES AND FIXTURE STOPS SHALL BE CHECKED FOR PROPER OPERATION AND FINAL ADJUSTMENT.

3.07 HANGERS AND SUPPORTS

HOLD HORIZONTAL PIPE RUNS FIRMLY IN PLACE USING APPROVED STEEL AND IRON HANGERS, SUPPORTS, AND/OR PIPE RESTS UNLESS OTHERWISE INDICATED. SUSPEND HANGER RODS FROM CONCRETE INSERTS OR FROM APPROVED BRACKETS, CLAMPS OR CLIPS. HANG PIPES INDIVIDUALLY OR IN GROUPS IF SUPPORTING STRUCTURE IS ADEQUATE TO SUPPORT WEIGHT OF PIPING AND FLUID, EXCEPT FOR BURIED PIPING, HANG OR SUPPORT PIPE RUNS SO THAT THEY MAY EXPAND OR CONTRACT FREELY WITHOUT STRAIN TO PIPE OR EQUIPMENT.

1. HORIZONTAL STEEL PIPING: PROVIDE HANGERS OR SUPPORTS EVERY 10 FT. EXCEPT EVERY 8 FT. FOR PIPING 1-1/4 IN. AND SMALLER.
2. HORIZONTAL COPPER TUBING: FOR 2 IN. DIAMETER AND OVER, PROVIDE HANGERS EVERY 10 FT. ; FOR 1-1/2 IN. DIAMETER AND SMALLER, EVERY 6 FT.
3. HORIZONTAL CAST-IRON HUB AND SPIGOT PIPING: PROVIDE HANGERS OR SUPPORTS AT EACH HUB.
4. HORIZONTAL CAST-IRON NO-HUB PIPING: PROVIDE HANGERS OR SUPPORTS AT EACH SIDE OF NO-HUB FITTINGS. PROVIDE ANTI-SEPARATION BRACING AT EACH 90 DEGREE CHANGE OF DIRECTION.
5. VERTICAL PIPING: SUPPORT AT FLOOR WITH IRON PIPE CLAMPS.

BRANCHES: PROVIDE SEPARATE HANGERS OR SUPPORTS FOR BRANCH LINES 6 FT. OR MORE IN LENGTH.

SOUND AND ELECTROLYSIS ISOLATORS: PROVIDE AT ALL HANGERS AND SUPPORTS FOR HOT AND COLD DOMESTIC WATER LINES . SECURELY ATTACH PIPE TO WALLS, STUDS, ETC. ALL SUCH PIPING ISOLATED FROM STRUCTURE BY "TRISOLATORS".

3.08 TESTS

PERFORM TESTS TO ARCHITECT'S SATISFACTION. MAKE TESTS IN PRESENCE OF OWNER'S REP AND AT A TIME SUITABLE TO HIM IF REQUESTED . FURNISH NECESSARY LABOR AND EQUIPMENT AND BEAR COSTS FOR TESTING . COST OF REPLACING AND/OR REPAIRING DAMAGE RESULTING THEREFORE SHALL BE BORNE BY THIS CONTRACTOR. SHOULD THE CONTRACTOR REFUSE OR NEGLECT TO MAKE TESTS NECESSARY TO SATISFY THE ARCHITECT THAT REQUIREMENT OF SPECIFICATIONS AND DRAWINGS ARE MET, SUCH TESTS MAY BE MADE BY AN INDEPENDENT TESTING COMPANY AND THE CONTRACTOR CHARGED FOR ALL EXPENSES.

HYDROSTATIC TESTS: MAKE BY COMPLETELY FILLING PIPING SYSTEM WITH WATER AND ELIMINATING ACCUMULATIONS OF AIR SO THAT LEAKAGE, NO MATTER HOW SMALL, WILL BE APPARENT ON TESTING GAUGE IMMEDIATELY . MAINTAIN PRESSURE UNTIL PIPE UNDER TEST HAS BEEN EXAMINED, BUT IN NO CASE LESS THAN 24 HOURS. TEST SYSTEMS AT THE FOLLOWING PRESSURE.

SYSTEM	TEST PRESSURE
DOMESTIC COLD WATER	150 PSIG
DOMESTIC HOT WATER	150 PSIG

SANITARY SOIL, WASTE, VENT SYSTEM TESTS: BEFORE INSTALLATION OF FIXTURES, CAP END OF SYSTEM AND FILL LINES WITH WATER TO 10 FT. ABOVE THE SECTION BEING TESTED. (INCLUDING VENTS) AND ALLOW TO STAND FOR AT LEAST FIFTEEN (15) MINUTES BEFORE INSPECTION STARTS. MAKE TESTS IN SECTIONS IF NECESSARY OR CONVENIENT. HOWEVER, INCLUDE INTERCONNECTIONS BETWEEN NEW SECTIONS AND PREVIOUSLY TESTED SECTIONS IN THE NEW TEST.

ROOF DRAINAGE SYSTEM: TEST AS SPECIFIED FOR SANITARY SYSTEM.

GAS SYSTEMS: TEST WITH COMPRESSED AIR AT 10 PSI FOR SIX HOURS OR LONGER AS DIRECTED TO PROVIDE A TIGHT SEAL WITHOUT LEAKS . USE PRESSURE RECORDER TO RECORD PRESSURE OF ALL LINES FOR DURATION OF TEST.

REPAIR ALL LEAKAGES AND RETEST AS REQUIRED.

3.09 CLEANOUTS

PROVIDE CLEANOUTS WHERE INDICATED AND REQUIRED. UNLESS OTHERWISE INDICATED, CLEANOUTS SHALL BE ACCESSIBLE WITH EXTENSIONS TO GRADE, TO OUTSIDE OF BUILDINGS, OR TO FLOORS ABOVE AS INDICATED OR REQUIRED. DO NOT LOCATE CLEANOUTS IN PUBLIC LOBBIES AND PUBLIC CORRIDORS UNLESS APPROVED BY ARCHITECT.

MEMBRANES: WHERE WATERPROOFING MEMBRANE OCCURS UNDER FLOOR, BRING MEMBRANE TO CLEANOUT WITHOUT PUNCTURING, AND PERMANENTLY ANCHOR TO INTEGRAL ANCHORING FLANGE WITH A HEAVY CAST-IRON CLAMPING COLLAR AND RUSTPROOFED BOLTS.

COVERS: SET CLEANOUT COVERS WITH ALL FINISHED WALL, FLOOR OR GRADE. IN ALL CASES SECURELY ANCHOR BY MEANS OF INTEGRAL LUGS AND BOLTS. WHERE SURFACING MATERIAL SUCH AS RESILIENT COVERING IS SPECIFIED, ASCERTAIN THICKNESS BEING USED AND SET CLEANOUT TOP SO FINISHED FLOOR IS SMOOTH.

USE ACORN 3500 THREAD COMPOUND.

3.10 PIPE INSTALLATION

MAKE PIPE RUNS STRAIGHT AND TRUE. SPRINGING OR FORCING PIPING INTO PLACE IS NOT PERMITTED . INSTALL IN MANNER TO PREVENT ANY UNDUE STRAIN ON EQUIPMENT. MAKE JOINTS SMOOTH AND UNOBSTRUCTED INSIDE AND OUT, AND REAM PIPE ENDS THOROUGHLY TO REMOVE BURRS. CONCEAL PIPING IN FINISHED PORTIONS OF THE BUILDINGS EXCEPT AS OTHERWISE DIRECTED OR INDICATED. CAP OR PLUG ENDS AND OPENINGS IN PIPE AND FITTINGS IMMEDIATELY TO EXCLUDE DIRT UNTIL EQUIPMENT IS INSTALLED OR FINAL CONNECTIONS ARE MADE.

INSTALL PIPING TO CLEAR BEAMS UNLESS SLEEVING IS INDICATED. CONSTANTLY CHECK WORK OF OTHER TRADES TO PREVENT INTERFERENCE WITH THIS INSTALLATION. OBTAIN APPROVAL FROM ARCHITECT IF CORING OR CUTTING OF CONCRETE WORK IS NECESSARY DUE TO FAILURE TO INSTALL REQUIRED SLEEVES PRIOR TO THE TIME OF CONCRETE POUR. COST OF CORING AND CUTTING WORK SHALL BE BORNE BY THE SUBCONTRACTOR.

EXPOSED PLATED OR ENAMELED PIPE: MAKE CONNECTIONS TO EQUIPMENT WITH SPECIAL CARE. SHOW NO TOOL MARKS OR THREADS.

DIELECTRIC UNIONS: MAKE CONNECTIONS BETWEEN TWO DISSIMILAR METAL PIPES WITH DIELECTRIC UNIONS.

UNIONS: PROVIDE A UNION ON ONE SIDE OF EACH SHUTOFF VALVE, AT BOTH SIDES OF AUTOMATIC VALVES, AT EQUIPMENT CONNECTIONS AND ELSEWHERE INDICATED OR REQUIRED, UNLESS FLANGES ARE INDICATED.

FLOOR, WALL AND CEILING PLATES: PROVIDE WHERE PIPES PIERCE FINISHED SURFACES.

NOISE: INSTALL SOIL, WASTE, AND WATER PIPING IN A MANNER THAT PREVENTS ANY UNUSUAL NOISE FROM FLOW OF WATER UNDER NORMAL CONDITIONS.

SHUTOFF VALVES: PROVIDE WHERE INDICATED AND REQUIRED FOR ADEQUATE CONTROL OF SYSTEMS AND FOR ISOLATION OF FIXTURE GROUPS AND EQUIPMENT.

BURIED PIPING: INSTALL WITH MINIMUM 36 IN. COVERAGE UNLESS OTHERWISE INDICATED. LAY PIPING ACCURATELY TO GRADE WHERE INVERT ELEVATIONS ARE INDICATED. WHEN REQUIRED, PROVIDE THRUST BLOCKS PER MANUFACTURER'S RECOMMENDATIONS.

EQUIPMENT AND MATERIALS: INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

ACCESSIBILITY: INSTALL WORK READILY ACCESSIBLE FOR NORMAL OPERATION, READING OF INSTRUMENTS, ADJUSTMENT, SERVICE, INSPECTION AND REPAIR. PROVIDE ACCESS PANELS WHERE INDICATED AND REQUIRED.

PIPE JOINTS: MAKE SCREWED JOINTS WITH A MINIMUM AMOUNT OF COMPOUND APPLIED TO THE MALE THREAD ONLY. ALL JOINTS SHALL BE MADE PER CODE REQUIREMENTS.

PROVIDE PIPE ISOLATION AT ALL HANGERS FOR NON-INSULATED MATERIALS.

PIPING ROUGH-IN FOR FIXTURES: SUPPORT OR SECURE TO BUILDING CONSTRUCTION OF FIRMLY ANCHORED WASTE PIPING SO THAT PIPES CANNOT BE DISPLACED. DO NOT SECURE TO WALLS. USE OF MAKESHIFT DEVICES, SUCH AS ROPE, WIRE, TAPE, ETC. IS PROHIBITED.

HORIZONTAL DRAINAGE PIPING SHALL BE INSTALLED IN UNIFORM ALIGNMENT AT UNIFORM SLOPES. THE MINIMUM SLOPE OF HORIZONTAL PIPE 4" OR LARGER IN DIAMETER MAY HAVE A SLOPE OF NOT LESS THAN 1% (1/8 INCH PER FOOT). THE MINIMUM SLOPE OF HORIZONTAL PIPE LESS THAN 4" MAY HAVE A SLOPE OF NOT LESS THAN 2% (1/4 INCH PER FOOT).

PART 4 – AUTOMATIC FIRE SPRINKLERS AND PIPING

AUTOMATIC FIRE SPRINKLERS AND PIPING

A. FIRE SPRINKLERS SHALL BE PROVIDED THROUGHOUT BUILDING IN ACCORDANCE WITH BUILDING CODES.

B. AUTOMATIC, WET FIRE SPRINKLER SYSTEM SHALL BE DESIGNED, AND INSTALLED IN ACCORDANCE WITH NFPA #13, 2007 EDITION.

C. UNDERGROUND FIRE LINE SHALL BE DESIGNED IN ACCORDANCE WITH NFPA#24, 2007, INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCE.

D. SHOP DRAWINGS, CALCULATIONS AND MATERIAL SUBMITTALS SHALL BE TO ENGINEER OF RECORD, FOR REVIEW PRIOR TO SUBMITTING TO AUTHORITIES HAVING JURISDICTION.

E. HYDRAULIC CALCULATIONS SHALL BE PREPARED IN ACCORDANCE WITH NFPA.

F. FIRE SPRINKLER SYSTEM SHALL BE DESIGNED WITH A MINIMUM 15% REDUCED FLOW DATA PRESSURES: FLOW TEST SHALL BE PERFORMED BY THE FIRE SPRINKLER CONTRACTOR. A COPY OF FLOW TEST SHEETS SHALL BE PROVIDED TO REVIEWING ENGINEER.

G. FIRE SPRINKLERS SHALL BE QUICK RESPONSE LISTED THROUGHOUT LIGHT HAZARD OCCUPANCY SPACES. EXTENDED COVERAGE SPRINKLERS SHALL BE INSTALLED PER MANUFACTURERS REQUIREMENTS. SPRINKLERS SHALL BE CHROME WITH CHROME ESCUTCHEON.

H. SPRINKLERS POSITIONED NEAR UNIT HEATERS SHALL BE HIGH TEMP. 286F TYPE.

I. SPRINKLER PIPING SHALL BE EXPOSED IN STORAGE/REPAIR SPACE, SHALL BE SPACED SO AS NOT TO EXCEED SPRINKLER LISTINGS. REMOTE AREA SHALL BE HYDRAULICALLY CALCULATED FOR ORDINARY HAZARD GROUP 2 OCCUPANCY, USING THE AREA DESIGN METHOD. REMOTE AREA SHALL BE REDUCED/INCREASED WHEN APPLICABLE TO CEILING HEIGHTS, AND PITCH.

J. EXTERIOR, COMBUSTIBLE CANOPY AREA, SHALL BE DESIGNED AS AN ORDINARY HAZARD GROUP 1 OCCUPANCY.

K. FLANGE SPIGOT SHALL BE INSTALLED WITH THRUST BLOCKS AND RESTRAINTS. SEE DETAIL.

L. FIRE SPRINKLER, SYSTEM RISER SHALL BE INSTALLED AS SHOWN IN DETAIL. DOUBLE CHECK VALVE ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH STATE REQUIREMENTS PRIOR TO SYSTEM ACTIVATION.

M. PIPING SHALL BE BLACK, SCHEDULE-40, DYNATHREAD-40, SCHEDULE-10 OR DYNAFLOW-10 STYLE PIPING. SUBMIT MATERIAL OF EQUAL VALUE.

N. FITTINGS SHALL BE THREADED, GROOVED, OR WELDED OUTLETS TYPICALLY. MECHANICAL OR PLAIN END FITTINGS SHALL NOT BE USED FOR STANDARD OF INSTALLATION. MECHANICAL AND PLAIN END FITTINGS MAY ONLY BE USED FOR FIELD MODIFICATIONS.

O. PIPING AND SPRINKLERS IN UNHEATED SPACES SHALL BE PROTECTED USING AN ANTIFREEZE SOLUTION, AND RELATED VALVING.

P. TESTING CERTIFICATES SHALL BE PREPARED AND PROVIDED IN ACCORDANCE WITH NFPA#13.

Q. A WARRANTY, FOR PRODUCT AND SYSTEM OPERATION SHALL BE PROVIDED FOR ONE YEAR, UPON SYSTEM ACTIVATION AND ACCEPTANCE.

– END –

Western Architecture Design Group, Inc.
2 West St. George Blvd.
Ancestor Square Suite 10
St. George Utah 84770
435/656.1312 fax 656.1355
westerndesign@qwest.net

CONSULTANTS
VAN BOERUM & FRANK ASSOCIATES INC.
WWW.VBFA.COM CONSULTING ENGINEERS
Salt Lake City · Logan · St. George · Tempe · Pocatello
1070 W 1600 S, Ste. #104 435.674.4800 T
St. George, UT 84770 435.674.2708 F
VBFA Project Number:8108

LICENSED PROFESSIONAL ENGINEER
No. 353492
LADD M. BIRCH
06-06-08
STATE OF UTAH

PAINTER'S SERVICE CENTER

1600 HILTON DR.
ST. GEORGE, UTAH 84770

JIM PAINTER

MARK	DATE	DESCRIPTION
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PROJECT NO:	VBFA-8108
MODEL FILE:	
DRAWN BY:	P.FARNSWORTH
CHK'D BY:	L.BIRCH
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