



THE CLEVELAND CULTURAL GARDENS FEDERATION CENTENNIAL PEACE PLAZA **ROCKEFELLER PARK - CLEVELAND, OHIO 44108**





ARCHITECT

Berj A. Shakarian, AIA, NCARB, LEED AP BD+C **CIVIL ENGINEER** Stephen Hovancsek & Assoc., Inc. **STRUCTURAL ENGINEER Osborn Engineering MECHANICAL ENGINEER Osborn Engineering ELECTRICAL ENGINEER Osborn Engineering** FOUNTAIN CONSULTANT **Hydro-Dramatics**

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BERJ A. SHAKARIAN, ARCHITECT AIA, NCARB, LEED AP BD+C

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REVISIONS	
DRAWN	SCALE
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DATE	PROJECT NO.
12/15/2018	
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PROJECT SITE LOCATION



SITE w. HUNGARIAN GARDEN VIEW

SITE w. EAST BLVD. ENTRANCE VIEW

SITE w. GERMAN GARDEN VIEW

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SNOITIONS

EXISTIN

PHOTO SURVEY

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GENERAL

CONSTRUCTION AND MATERIAL SPECIFICATIONS

THE STANDARD FOR ALL MATERIALS AND/OR WORKMANSHIP SHALL BE AS SPECIFIED IN THE "STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS". DATED JANUARY 1. 2016. OR ANY SUBSEQUENT ISSUES THEREOF AND AS MODIFIED ON THESE PLANS OR IN THE SPECIFICATIONS. THROUGHOUT THE PLANS THE REFERENCE TO SPECIFIC O.D.O.T. ITEM NUMBERS ARE INDICATED. WHERE REFERENCE IS MADE IN THE SPECIFICATIONS TO THE STATE OF OHIO, IT SHALL MEAN THE OWNER; REFERENCE MADE TO THE DEPARTMENT SHALL MEAN THE OWNER; REFERENCE MADE TO THE DIRECTOR SHALL MEAN THE OWNER: AND REFERENCE MADE TO THE ENGINEER SHALL MEAN THE ARCHITECT OR ENGINEER PREPARING THE PROJECT PLANS.

MATERIAL AND WORKMANSHIP SHALL ALSO CONFORM TO THE "UNIFORM STANDARDS FOR SEWAGE IMPROVEMENTS", RELATED GRAPHICS DETAILS OF THE "UNIFORM STANDARD SEWER DETAILS", O.D.O.T. BUREAU OF LOCATION AND DESIGN STANDARD CONSTRUCTION DRAWINGS, THE RULES AND REGULATIONS OF THE CUYAHOGA COUNTY SANITARY ENGINEERING DEPARTMENT AND THE ORDINANCES OF THE CITY OF CLEVELAND. WHERE CONFLICTS OCCUR IN THE ABOVE, THE ENGINEER SHALL DETERMINE THE GOVERNING AUTHORITY. ANY DEFECTS IN THE CONSTRUCTION SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND LICENSES AS NECESSARY, AND SHALL BE RESPONSIBLE FOR ALL DAMAGES TO THE EXISTING WATER AND SEWERAGE SYSTEM RESULTING FROM NON-CONFORMANCE WITH THE APPLICABLE STANDARDS. THROUGH GENERAL NEGLIGENCE. OR NOT TAKING ANY NECESSARY PRECAUTIONS. THE STANDARD FOR ALL MATERIALS AND/OR WORKMANSHIP, GENERAL PROVISIONS, MEASUREMENT AND PAYMENT SHALL FOLLOW THE ABOVE MENTIONED SOURCES UNLESS OTHERWISE STATED IN THESE NOTES. THE PLANS OR CONTRACT SPECIFICATIONS.

CONTRACTOR SHALL BE REQUIRED TO COMPLY WITH ALL OSHA REQUIREMENTS REGARDING ENTRANCE INTO CONFINED SPACES (MANHOLES, TRENCHES, ETC.) FAILURE TO COMPLY WITH THESE REQUIREMENTS MAY RESULT IN FORFEITURE OF THE CONTRACT.

CONTRACTOR SHALL NOTE THAT THIS PROJECT IS ANTICIPATED TO BE COMPLETED IN ONE CONSTRUCTION SEASON. PRICE INCREASES FOR BID ITEMS WILL NOT BE PERMITTED.

<u>UTILITIES</u>

CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT THE OHIO UTILITY PROTECTION SERVICE. OHIO811.ORG OR CALL 1-800-362-2764 PRIOR TO BEGINNING ANY WORK.

PRE-CONSTRUCTION VIDEO

THE ENTIRE SITE SHALL BE "AUDIO VISUAL" INSPECTED IN ACCORDANCE WITH THE SPECIFICATIONS. PARTICULAR ATTENTION SHALL BE PAID TO AREAS ALONG THE CONSTRUCTION LIMITS. ESPECIALLY CONDITIONS OF DRIVEWAY. WALKS. STRUCTURES AND NEARBY PLANTS. TWO COPIES OF THE VIDEO TAPE SHALL BE PRESENTED TO THE ENGINEER BEFORE ANY WORK COMMENCES.

PRECAUTION AGAINST UTILITY DAMAGE

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS, AT NO EXPENSE TO THE OWNER, TO AVOID DAMAGE TO EXISTING UNDERGROUND UTILITY LINES DURING THE INSTALLATION OF THE PROPOSED IMPROVEMENTS. IT MAY BE NECESSARY TO CHANGE THE ALIGNMENT OR THE FLOW LINE ELEVATION OF PROPOSED SEWERS DUE TO VARIOUS EXISTING UTILITY LINES AS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL MAKE INVESTIGATIONS TO DETERMINE THE LOCATION OF EXISTING UTILITY LINES PRIOR TO THE INSTALLATION OF THE PROPOSED IMPROVEMENTS. SUCH INVESTIGATIONS SHALL BE AT NO ADDITIONAL COST TO THE OWNER.

MATERIAL / EQUIPMENT STORAGE

CONTRACTOR SHALL BE LIMITED TO STORE EQUIPMENT AND/OR MATERIAL ON THE PROJECT SITE ONLY. ALL MATERIAL MUST BE WITHIN PROJECT LIMITS AND SHALL NOT OBSTRUCT ROADWAY/DRIVEWAY ACCESS OR VISIBILITY TO VEHICLES. EXCESSIVE MATERIAL WHICH PROHIBIT ROADWAY OR DRIVEWAY ACCESS OR IS DETERMINED TO BE A SAFETY RISK SHALL BE REMOVED FROM SITE AT THE CONTRACTORS EXPENSE.

<u>POSITIVE DRAINAGE</u>

CONSTRUCTION SITE AT ALL TIMES.

CONSTRUCTION LAYOUT STAKES AND SURVEYING

ALL CONSTRUCTION LAYOUT SHALL BE PERFORMED BY A LICENSED PROFESSIONAL SUR VE YOR.

EXISTING TREE PROTECTION

ALL TREES IN THE PROJECT LIMITS SHALL BE PROTECTED. NO TREE SHALL BE REMOVED UNLESS SPECIFIC PERMISSION IN WRITING IS OBTAINED FROM THE OWNER.

ITEM 203: EXCAVATION AND EMBANKMENT CONSTRUCTION, AS PER PLAN

CONSTRUCTION SHALL APPLY.

THIS WORK INCLUDES ALL NECESSARY EXCAVATION AND EMBANKMENT CONSTRUCTION NECESSARY TO CONSTRUCT THE PROPOSED IMPROVEMENTS TO GRADE.

ANY EXPORT OR IMPORT REQUIRED TO COMPLETE THIS PROJECT SHALL BE INCLUDED IN THE CONTRACT AMOUNT



CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN POSITIVE DRAINAGE ON THE

ALL APPLICABLE PROVISIONS OF ODOT ITEM 203: EXCAVATION AND EMBANKMENT

ITEM 605: UNDERDRAINS, AS PER PLAN

ALL APPLICABLE PROVISIONS OF ODOT ITEM 605: UNDERDRAINS SHALL APPLY.

THE PIPE FOR THE UNDERDRAINS SHALL BE 707.41 SMOOTH WALL POLYVINYL CHLORIDE UNDERDRAIN PIPE CONFORMING TO ASTM F 758. TYPE PS 46 MINIMUM WITH A MINIMUM OF 4 ROWS OF PERFORATIONS.

ITEM 611: STORM SEWER , AS PER PLAN

ALL APPLICABLE PROVISIONS OF ODOT ITEM 611: PIPE CULVERTS. SEWERS. DRAINS. AND DRAINAGE STRUCTURES SHALL APPLY.

STORM SEWER PIPE SHALL BE 707.45 POLYVINYL CHLORIDE SOLID WALL PIPE CONFORMING TO ASTM D 3034. SDR 35 WITH PREMIUM JOINTS.

ITEM 660: TOPSOIL, AS PER PLAN

THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 4-INCHES OF TOPSOIL OVER ALL DISTURBED AREAS WHICH ARE TO BE PERMANENTLY SEEDED. THE PLACED TOPSOIL SHALL BE COMPACTED AND THEN THE SURFACE SHALL BE RAKED TO ACCEPT THE PERMANENT SEEDING AND MULCHING.

9" Min.







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Seeding Dates	Species	Lb./1000 ft2	Lb/Acre		
March 1 to August 15	Oats	3	128 (4 Bushel)		
	Tall Fescue	1	40		
	Annual Ryegrass	1	40		
	Perennial Ryegrass	1	40		
	Tall Fescue	1	40		
	Annual Ryegrass	1	40		
	Annual Ryegrass	1.25	55		
	Perennial Ryegrass	3.25	142		
	Creeping Red Fescue	0.4	17		
	Kentucky Bluegrass	0.4	17		
	Oats	3	128 (3 bushel)		
	Tall Fescue	1	40		
	Annual Ryegrass	1	40		
August 16th to November	Rye	3	112 (2 bushel)		
	Tall Fescue	1	40		
	Annual Ryegrass	1	40		
	Wheat	3	120 (2 bushel)		
	Tall Fescue	1	40		
	Annual Ryegrass	1	40		
	Perennial Rye	1	40		
	Tall Fescue	1	40		
	Annual Ryegrass	1	40		
	Annual Ryegrass Perennial Ryegrass Creeping Red Fescue Kentucky Bluegrass	1.25 3.25 0.4 0.4	40 40 40		
November 1 to Feb. 29	Use mulch only or dormant seeding		·		

AREA REQUIRING PERMANENT STABILIZATION
ANY AREA THAT WILL LIE DORMANT FOR O YEAR OR MORE
ANY AREA WITHIN 50 FEET OF A WATERCO AND AT FINAL GRADE
ANY AREA AT FINAL GRADE
AREA REQUIRING TEMPORARY STABILIZATION
ANY DISTURBED AREA WITHIN 50 FEET OF WATERCOURSE AND NOT AT FINAL GRADE
FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTURBED AREA, INCLUDING SOIL STOCKPI THAT WILL BE DORMANT FOR MORE THAN T DAYS BUT LESS THAN ONE YEAR, AND NO WITHIN 50 FEET OF A WATERCOURSE.
DISTURBED AREA THAT WILL BE IDLE OVER WINTER.
NOTE: WHERE VEGATATIVE STABILIZATION T

Specifications for

Permanent Seeding

Site Preparation

- 1. Subsoiler, plow, or other implement shall be used to reduce soil compaction and allow maximum infiltration. (Maximizing infiltration will help control both runoff rate and water quality.) Subsoiling should be done when the soil moisture is low enough to allow the soil to crack or fracture. Subsoiling shall not be done on slip-prone areas where soil preparation should be limited to what is neces- • From November 20 through March 15, when soil condisary for establishing vegetation.
- 2. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation and seeding.
- 3. Topsoil shall be applied where needed to establish vegetation.

Seedbed Preparation

- 1. Lime—Agricultural ground limestone shall be applied to acid soil as recommended by a soil test. In lieu of a soil test, lime shall be applied at the rate of 100 pounds per 1,000-sq. ft. or 2 tons per acre.
- . Fertilizer—Fertilizer shall be applied as recommended by a soil test. In place of a soil test, fertilizer shall be applied at a rate of 25 pounds per 1,000-sq. ft. or 1000 pounds per acre of a 10-10-10 or 12-12-12 analyses.
- 3. The lime and fertilizer shall be worked into the soil with a disk harrow, spring-tooth harrow, or other suitable field implement to a depth of 3 inches. On sloping land, the soil shall be worked on the contour.

Seeding Dates and Soil Conditions

Seeding should be done March 1 to May 31 or August 1 to September 30. If seeding occurs outside of the abovespecified dates, additional mulch and irrigation may be required to ensure a minimum of 80% germination. Tillage for seedbed preparation should be done when the soil is dry enough to crumble and not form ribbons when compressed by hand. For winter seeding, see the following section on dormant seeding.

Dormant Seedings

1. Seedings should not be made from October 1 through November 20. During this period, the seeds are likely to germinate but probably will not be able to survive the winter.

3. Straw and Mulch Anchoring Methods

- Straw mulch shall be anchored immediately to minimize loss by wind or water.
- Mechanical—A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but, generally, be left longer than 6 inches.
- Mulch Netting—Netting shall be used according to the manufacturer's recommendations. Netting may be neces- Irrigation sary to hold mulch in place in areas of concentrated runoff Permanent seeding shall include irrigation to establish and on critical slopes.
- Asphalt Emulsion—Asphalt shall be applied as recommended by the manufacture or at the rate of 160 gallons per acre.

Table 7.10.2 Permanent Seeding

- 2. The following methods may be used for "Dormant Seeding":
- From October 1 through November 20, prepare the seedbed, add the required amounts of lime and fertilizer, then mulch and anchor. After November 20, and before March 15, broadcast the selected seed mixture. Increase the seeding rates by 50% for this type of seeding.
- tions permit, prepare the seedbed, lime and fertilize, apply the selected seed mixture, mulch and anchor. Increase the seeding rates by 50% for this type of seeding.
- Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydro-seeder (slurry may include seed and fertilizer) on a firm, moist seedbed.
- Where feasible, except when a cultipacker type seeder is used, the seedbed should be firmed following seeding operations with a cultipacker, roller, or light drag. On sloping land, seeding operations should be on the contour where feasible.

Mulching

- Mulch material shall be applied immediately after seeding. Dormant seeding shall be mulched. 100% of the ground surface shall be covered with an approved material.
- 2. Materials
- Straw—If straw is used it shall be unrotted small-grain straw applied at the rate of 2 tons per acre or 90 pounds (two to three bales) per 1,000-sq. ft. The mulch shall be spread uniformly by hand or mechanically applied so the soil surface is covered. For uniform distribution of handspread mulch, divide area into approximately 1,000-sq.ft. sections and spread two 45-lb. bales of straw in each section.
- Hydroseeders—If wood cellulose fiber is used, it shall be applied at 2,000 lb./ac. or 46 lb./1,000 sq. ft.
- Other—Other acceptable mulches include rolled erosion control mattings or blankets applied according to manufacturer's recommendations or wood chips applied at 6 tons per acre.
- Synthetic Binders—Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Tack or equivalent may be used at rates specified by the manufacturer.
- Wood Cellulose Fiber—Wood cellulose fiber shall be applied at a net dry weight of 750 pounds per acre. The wood cellulose fiber shall be mixed with water with the mixture containing a maximum of 50 pounds cellulose per 100 gallons of water.

vegetation during dry weather or on adverse site conditions, which require adequate moisture for seed germination and plant growth.

Irrigation rates shall be monitored to prevent erosion and damage to seeded areas from excessive runoff.

	See	ding Rate	Notes:		
Seed Mix	Lbs./acre	Lbs./1,000 Sq. Feet			
		General Use			
Creeping Red Fescue Domestic Ryegrass Kentucky Bluegrass	20-40 10-20 20-40	1/2-1 1/4-1/2 1/2-1	For close mowing & for waterways with <2. ft/sec velocity		
Tall Fescue	40-50	1-1 1/4			
Turf-type (dwarf) Fescue	90	2 1/4			
	ç	Steep Banks or Cut Slopes			
Tall Fescue	40-50	1-1 1/4			
Crown Vetch Tall Fescue	10-20 20-30	1/4-1/2 1/2-3/4	Do not seed later than August		
Flat Pea Tall Fescue	20-25 20-30	1/2-3/4 1/2-3/4	Do not seed later than August		
		Road Ditches and Swales			
Tall Fescue	40-50	1-11/4			
Turf-type (Dwarf) Fescue Kentucky Bluegrass	90 5	2 1/4 0.1			
		Lawns			
Kentucky Bluegrass Perennial Ryegrass	100-120	2 2			
Kentucky Bluegrass Creeping Red Fescue	100-120	2 1-1/2	For shaded areas		

Note: Other approved seed species may be substituted.

ROCKEFELLER I NTENNIAL eland Cultural Gard \mathbf{C} EL he C 0 5 REVISIONS SCALE DRAWN TC/AJS NONE

DATE

12/15/2018

PROJECT NO.

SHEET NO.

C-3.1

prepared by STEPHEN HOVANCSEK & ASSOC., INC.

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BUILDING	DESIGN CRITERIA:	
GOVERNIN	G CODE: 2017 OHIO BUILDING CODE IN CONJUNCTION WITH ASCE 7-	-10
RISK CATE	GORY:	II
FLOOR LIVI	E LOADS:	
ASS	SEMBLY	100 PSF
LIVE LOA	D REDUCTION	NONE
ROOF LIV	E LOAD	30 PSF
SNOW LOA	D:	
GR	OUND SNOW LOAD, Pg:	30 PSF
FLA	T ROOF SNOW LOAD, Pf:	30 PSF
SNO	OW EXPOSURE FACTOR, Ce:	1.0
SNO	OW IMPORTANCE FACTOR	1.0
THE	ERMAL FACTOR, Ct:	1.2
SNO	OW DRIFT:	PER ASCE-7
WIND LOAD	D:	
ULT	IMATE DESIGN WIND SPEED (Vult):	115 MPH
NOM	MINAL DESIGN WIND SPEED (Vasd):	90 MPH
RIS	K CATEGORY	I
WIN	ND EXPOSURE	E
COI	MPONENTS AND CLADDING:	PER ASCE 7
SEISMIC LO	DAD:	
RIS	K CATEGORY:	·
SEI	SMIC IMPORTANCE FACTOR	1.0
SIT	E SPECTRAL RESPONSE ACCELERATION (Ss)	0.178g
SIT	E SPECTRAL RESPONSE ACCELERATION (S1)	0.058g
SEI	SMIC SITE CLASS	D
DES	SIGN SPECTRAL RESPONSE ACCELERATION (Sds)	0.19g
DES	SIGN SPECTRAL RESPONSE ACCELERATION (Sd1)	0.093g
SEI	SMIC DESIGN CATEGORY	Е
LAT	ERAL FORCE RESISTING SYSTEM STRUCTURAL SYSTEI	M NOT SPECIFICALLY
	DETAILED FOR SEI	SMIC RESISTANCE
SEI	SMIC BASE SHEAR (V)	PER ASCE 7
SEI	SMIC RESPONSE COEFFICIENT (Cs)	0.063
RES	SPONSE MODIFICATION FACTOR R	3.0
ANA	ALYSIS METHOD:EQUIVAI	LENT LATERAL FORCE
GENERAL (CONDITIONS	
1. SEE S MANU CONF REQU	SPECIFICATIONS FOR QUALITY OF CONSTRUCTION REQUIRED, QUAL JFACTURING AND INDUSTRY STANDARDS, PHYSICAL PROPERTIES O FORMANCE TO CODES AND REGULATIONS GUARANTEE AND WARRA JIREMENTS.	LITY OF WORK, OF MATERIALS, NTY

- SEE ARCHITECTURAL, FOUNTAIN, PLUMBING, AND ELECTRICAL DRAWINGS FOR OTHER PERTINENT INFORMATION RELATED TO STRUCTURAL WORK AND COORDINATE AS REQUIRED. CONTRACTOR SHALL COORDINATE STRUCTURAL DRAWINGS WITH ALL OTHER DRAWINGS WITHIN THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS RELATED TO EXISTING CONSTRUCTION, EXISTING SERVICES, AND THE SITE BEFORE BEGINNING WORK.
- CONSTRUCTION LOADS SHALL NOT EXCEED DESIGN LIVE LOADS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DESIGN REQUIRED TO SUPPORT CONSTRUCTION EQUIPMENT USED IN CONSTRUCTING THIS PROJECT. ALL EQUIPMENT SUPPORT DESIGN SHALL BE PERFORMED BY AN ENGINEER LICENSED IN THE STATE OF THE PROJECT. SHORING AND RESHORING IS THE RESPONSIBILITY OF THE CONTRACTOR.
- IF MATERIALS, QUANTITIES, STRENGTHS, OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES. THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH, OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE FOLLOWING ITEMS THAT WILL NOT BE REVIEWED BY THE OWNER, ARCHITECT OR ENGINEER.
- a. DEVIATIONS FROM CONTRACT DOCUMENTS.
- b. DIMENSIONS, ELEVATIONS, AND CONDITIONS TO BE CONFIRMED AND CORRELATED AT THE SITE.
- c. FABRICATION PROCESS INFORMATION.
- d. MEANS, METHODS, TECHNIQUES, PROCEDURES OF CONSTRUCTION, AND CONSTRUCTION SAFETY.
- e. COORDINATION OF THE WORK OF ALL TRADES.
- f. QUALITY ASSURANCE SUBMITTALS.
- ANY CHANGES TO THE STRUCTURAL SYSTEMS SHALL BE REDESIGNED BY A PROFESSIONAL ENGINEER AT NO COST TO THE OWNER OR THE A/E AND SUBMITTED TO THE A/E FOR REVIEW. SUBMITTAL SHALL BE ACKNOWLEDGED IN WRITING BEFORE BEGINNING CONSTRUCTION. IF CHANGES ARE MADE WITHOUT WRITTEN APPROVAL SUCH CHANGES SHALL BE THE LEGAL AND FINANCIAL RESPONSIBILITY OF THE PARTY MAKING THE CHANGE TO REPLACE OR REPAIR THE CONDITION AS DIRECTED BY THE A/E .
- CONTRACTOR IS RESPONSIBLE TO UNCOVER AND VISUALLY FIELD VERIFY THE EXISTING CONSTRUCTION PRIOR TO THE START OF ANY WORK AFFECTING THE EXISTING STRUCTURE. CONTRACTOR IS TO REPORT ANY CHANGES OR DISCREPANCIES FROM THOSE SHOWN TO THE A/E.

GEOTECHNICAL REPORT:

1. A SOILS REPORT HAS NOT BEEN COMPLETED FOR THIS PROJE FOUNDATION DESIGN IS BASED ON AN ASSUMED 1500 PSF BEARING PRESSURE ON FIRM UNDISTURBED SOIL. SEE FOUNDATION SECTION OF GENERAL NOTES FOR MORE

INFORMATION. EXCAVATION:

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDANCE AND CLEANUP OF STREET SPILLAGE OF EXCAVATED OR BACKFILL MATERIALS ENTERING OR LEAVING THE SITE. CLEANUP OF MAJOR SPILLS SHALL BE COMPLETED IMMEDIATELY. OTHER SPILLS SHALL BE CLEANED, AT A MINIMUM, DAILY. ALL CLEANUP SHALL BE COMPLETED TO THE FULL SATISFACTION OF THE OWNER AND CONSTRUCTION MANAGER.
- THE CONTRACTOR SHALL PROPERLY MOISTEN SURFACES AS REQUIRED TO PREVENT SOILS FROM BECOMING AIRBORNE AND CREATING A NUISANCE TO NEIGHBORING FACILITIES, THE PUBLIC, AND ANY CONCURRENT WORK ACTIVITIES. THE FINAL DETERMINATION OF THE SUCCESS OF DUST CONTROL MEASURES SHALL BE THE OWNER AND CONSTRUCTION MANAGER.
- ANY SITE DE-WATERING NECESSARY TO MAINTAIN A SAFE AND EFFICIENT EXCAVATION EFFORT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 4. ALL WORK SHALL BE EXECUTED AND INSPECTED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES, RULES, ORDINANCES, AND REGULATIONS PERTAINING TO SITE EXCAVATION, FILL, AND SHORING ACTIVITIES.
- ALL SITE GRADING SHALL BE SLOPED AS NOTED ON THE DRAWINGS, AS NOTED IN THE GEOTECHNICAL REPORT, OR AT A SHALLOWER SLOPE IF REQUIRED TO PROTECT WORKERS AND WORK IN PROGRESS FROM SOIL SLIPPAGE. ALL EXCAVATION ACTIVITIES SHALL BE COMPLETED IN ACCORDANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) REQUIREMENTS AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
- ANY SHARP OR LARGE OBJECTS PROTRUDING ABOVE THE FINAL ROUGH GRADE SHALL BE REMOVED. RESULTING HOLES SHALL BE FILLED WITH SELECT FILL MEETING THE REQUIREMENTS AS SET IN THE PROJECT SPECIFICATIONS.
- ALL EXCESS EXCAVATED MATERIALS THAT ARE NOT REUSABLE SHALL BE REMOVED FROM THE SITE PROPERLY AND LEGALLY DISPOSED AT AN OFF SITE LOCATION. REFERENCE SPECIFICATIONS FOR REQUIREMENTS RELATED TO THE IDENTIFICATION OF HAZARDOUS MATERIAL IN EXCAVATIONS AND REUSE OF EXCAVATED MATERIAL FOR BACKFILL.
- MUD-MATTING MAY BE REQUIRED TO PROVIDE STABLE SURFACE FOR FORMING AND PLACEMENT OF REINFORCING STEEL AND SUBSEQUENTLY PLACEMENT OF CONCRETE, SEE PROJECT SPECIFICATIONS.

FOUNDATIONS:

- THE GENERAL CONTRACTOR AND THE FOUNDATION CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE SURVEY BEFORE STARTING CONSTRUCTION.
- NOTIFY THE A/E AND OWNER'S REPRESENTATIVE OF ANY UNUSUAL SOIL CONDITION THAT ARE IN VARIANCE WITH TEST BORINGS, SUCH AS SPRING OR SEEPAGE WATER ENCOUNTERED, OR WHEN A DIFFERENT BEARING MATERIAL IS EVIDENT AND THERE IS A QUESTION OF THE BEARING CAPACITY.
- SET FOUNDATION AT ELEVATION SHOWN, OR ON FIRM UNDISTURBED MATERIAL OF DESIGN BEARING CAPACITY, WHICHEVER IS LOWER. THE GEOTECHNICAL ENGINEER SHALL VERIFY THAT EACH FOOTING PLACED IS BEARING ON DESIGN MATERIAL.
- a. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS, FLOOR SLABS, ETC. SHALL BE PROTECTED FROM FREEZING AND FROST ACTION DURING CONSTRUCTION.
- WHERE FOOTINGS ARE IN CLOSE PROXIMITY OF SEWERS, DRAINS CONDUITS UNDER FLOOR PIPES, ETC, BOTTOM OF ALL FOOTINGS SHALL BE AT OR BELOW INVERT ELEVATIONS OF ELEMENTS NOTED HEREIN.
- STEP FOOTINGS AT A RATIO OF ONE (1) VERTICAL TO TWO (2) HORIZONTAL, WITH A MAXIMUM VERTICAL STEP OF 2'-0". UNLESS NOTED OTHERWISE.
- SITE PREPARATION, STRIPPING, PROOF ROLLING, FILLING AND BACKFILLING SHALL BE DONE IN COMPLIANCE WITH PROJECT SPECIFICATIONS AND IN CONJUNCTION WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT. ALL FILL MATERIAL SHALL MEET THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
- INUNDATION AND LONG TERM EXPOSURE OF BEARING SURFACES, WHICH WILL RESULT IN DETERIORATION OF BEARING FORMATIONS. SHALL BE PREVENTED. EXCAVATION TO FINAL BEARING ELEVATION SHALL NOT BE MADE UNTIL JUST PRIOR TO PLACING FOUNDATIONS.
- BACKFILLING AGAINST FOUNDATION/BASEMENT WALLS SHALL NOT BE PERMITTED UNTIL 7 THE SUPPORTING FLOORS ARE IN PLACE AND ARE ABLE TO RESIST THE IMPOSED LATERAL FORCES. EXCEPT FOR CANTILEVER RETAINING WALLS OR UNLESS NOTED OTHERWISE ON DRAWINGS, THE WALLS ARE SUPPORTED BY THE FLOOR ABOVE AND BELOW. PROPER TEMPORARY BRACING MAY BE USED IN LIEU OF THE FLOOR SUPPORT BASED UPON THE DESIGN BY A PROFESSIONAL ENGINEER. THE DESIGN OF TEMPORARY BRACING IS THE RESPONSIBILITY OF THE CONTRACTOR.
- 8. BACKFILL AND FILL MATERIALS SHALL BE FREE OF DEBRIS, WASTE, FROZEN MATERIAL, ORGANIC, AND OTHER DELETERIOUS MATTER. POROUS FILL (SUB-BASE FOR SLAB-ON-GRADE) SHALL BE CRUSHED LIMESTONE a COMPACTED, (MINIMUM 6" THICK UNDER SLABS). GRADATION SHALL

THE FOLLOWING GRADATION:

CONFORM WITH ASTM C33 SIZE #57. DRAINAGE FILL SHALL BE WASHED. UNIFORMLY GRADED MIXTURE OF CRUSHED b. STONE OR UNCRUSHED GRAVEL AT EXTERIOR WALLS AND RETAINING WALL HAVING

SIEVE SIZE	TOTAL % PASSING
1"	100.
3/4"	90-100
3/8"	20-55
No. 4	0-10
No. 8	0-5

- c. WELL GRADED GRANULAR MATERIAL (#8) SHALL CONFORM WITH ASTM C33.
- ALL EXCAVATIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER AND TESTING AGENCY 9. WHO SHALL BE CONSULTED WHEN POOR SOIL, WATER, OBSTRUCTIONS, PIPING, ADJACENT SEWERS, EXISTING FOOTINGS, EXCAVATIONS, ETC. ARE ENCOUNTERED.

10. EXCAVATION AND COMPACTION:

- CARE SHALL BE TAKEN TO NOT TO DISTURB THE BOTTOM OF THE EXCAVATION. а. EXCAVATION TO FINAL GRADE SHALL NOT BE MADE UNTIL JUST PRIOR TO PLACING CONCRETE
- KEEP FOUNDATION EXCAVATIONS FREE OF WATER AT ALL TIMES. REPLACE b. WEAKENED SOIL WITH LEAN CONCRETE (1500 PSI).
- BACKFILL AND FILL SHALL BE PLACED IN LIFTS OF 8" MAXIMUM LOOSE DEPTH. EACH LIFT SHALL BE COMPACTED WITH A POWER VIBRATING COMPACTOR OR SIMILAR EQUIPMENT TO ASSURE MAXIMUM COMPACTION OF THE MATERIAL.
- 11. DEWATERING OF THE SITE MAY BE REQUIRED. METHODS FOR DEWATERING ARE THE CONTRACTORS RESPONSIBILITY. KEEP THE AREA OF WORK DRAINED AND FREE FROM ACCUMULATION OF SURFACE WATER AT ALL TIMES. PROVIDE, OPERATE AND MAINTAIN PUMPS, PUMPING EQUIPMENT, ETC., AS REQUIRED.
- 12. A TESTING AGENCY, PROVIDED BY THE OWNER, SHALL INSPECT THE CONDITION AND ASSURE THE ADEQUACY OF ALL SUBGRADES, BEARING CAPACITY, FILL AND BACKFILLS BEFORE PLACEMENT OF FOUNDATIONS. TEST RESULTS SHALL BE SENT TO THE ENGINEER AND TO THE OWNER.
 - a. AT FOOTING SUBGRADES, AT LEAST ONE TEST OF EACH SOIL STRATUM WILL BE PERFORMED TO VERIFY DESIGN BEARING CAPACITIES. TESTING AGENCY WILL TEST COMPACTION OF SOILS IN PLACE ACCORDING TO ASTM D 1556, D2167, D2922, AND ASTM D2937, AS APPLICABLE. TEST PER FOLLOWING:
 - PAVED AND BUILDING SLAB AREAS: AT SUBGRADE AND AT EACH COMPACTED FILL LAYER, AT LEAST 1 TEST FOR EVERY 2000 SQ. FT., BUT IN NO CASE LESS THAN 3 TESTS.
 - FOOTINGS: AT EACH COMPACTED BACKFILL LAYER AT EACH FOOTING OR 1
 - TEST FOR EACH 100 FT. OF WALL FOOTING. CONTRACTOR SHALL RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION IS OBTAINED.

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- CAST-IN-PLACE CONCRETE:
- 1. CAST-IN-PLACE CONCRETE WORK SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE CODES AND STANDARDS. ACI 301 "STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE" IS HEREBY MADE A PART OF THESE DRAWINGS. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 301, EXCEPT AS EXPLICITLY MODIFIED HEREIN.
- 2. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 318, "THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
- 3. CONCRETE SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTHS AT 28 DAYS:
 - 4000 PSI WITHOUT ENTRAINED AIR FOR ALL CONCRETE WITH A MAXIMUM а. WATER/CEMENT RATIO = 0.45 UNLESS SPECIFICALLY NOTED OTHERWISE.
 - 4000 PSI WITH A MAXIMUM WATER/CEMENT RATIO = 0.45 AND WITH AN b. ENTRAINED AIR ADMIXTURE CONFORMING WITH ASTM C260 FOR ALL CONCRETE PERMANENTLY EXPOSED TO THE WEATHER. THE AMOUNT OF ENTRAINED AIR SHALL BE 6% <u>+</u> 1%.
- 4. WELDED WIRE FABRIC: ASTM A82 AND A185 FOR SMOOTH STEEL WIRE
- REINFORCING BARS: ASTM 615, GRADE 60 (U.N.O.) WELDING OR TACK WELDING A615 BARS SHALL NOT BE PERMITTED. PROVIDE #5@12"oc EW IN ALL CAST-IN-PLACE CONCRETE UNO.
- 6. ALL REINFORCEMENT TO BE EPOXY COATED UNO.
- 7. REINFORCING BARS FOR WELDED APPLICATIONS SHALL CONFORM WITH A706, 60KSI YIELD STRENGTH.
- ALL WELDED WIRE FABRIC SHALL BE CHAIRED TO ITS PROPER HEIGHT AND MAINTAINED AT 8. THE PROPER LEVEL THROUGHOUT THE CONCRETE PLACING OPERATION. LIFTING OF WELDED WIRE FABRIC WITH A HOOK DURING CONCRETE PLACEMENT SHALL NOT BE PERMITTED.
- BEND ALL HORIZONTAL WALL AND BEAM BARS AROUND ALL CORNERS, UNLESS OTHERWISE 9 NOTED, PROVIDE ACLLAP FACH SIDE
- 10. REINFORCING BARS REQUIRED FOR PROPER SUPPORT OF PRINCIPAL REINFORCING SHALL BE DETAILED AND SUPPLIED BY THE CONTRACTOR WHETHER OR NOT THEY ARE INDICATED ON THE DRAWINGS. THE MINIMUM BAR SIZE SHALL BE #4 AND THE MAXIMUM SPACING SHALL BE 36" ON CENTER FOR ALL BARS THAT NEED SUPPORT. WELDED WIRE FABRIC SHALL NOT BE USED FOR THE SUPPORT OF PRINCIPAL REINFORCING.
- 11. PROVIDE CORROSION RESISTANT ACCESSORIES SUCH AS GRAY PLASTIC CHAIRS OR CHAIRS WITH PLASTIC COATED TIPS, IN ALL EXPOSED CONCRETE CONSTRUCTION. PRECAST CONCRETE CUBES OR SAND PLATE CHAIRS SHALL BE USED FOR THE SUPPORT OF REINFORCING ON GRADE. CONCRETE BLOCK OR CLAY MASONRY BRICK ARE NOT PERMITTED.
- 12. NO CONCRETE SHALL BE PLACED UNTIL THE PROPOSED CONCRETE MIX AND TEST HAVE BEEN SUBMITTED TO AND REVIEWED BY THE ARCHITECT AND AFTER THE CONTRACTOR HAS RECEIVED WRITTEN ACKNOWLEDGEMENT.
- 13. ALL CEMENT SHALL BE TYPE I OR TYPE III, BLENDED CEMENTS SHALL NOT BE USED.
- 14. CONCRETE SHALL BE DISCHARGED AT THE SITE WITHIN 1 1/2 HOURS AFTER WATER HAS BEEN ADDED TO THE CEMENT AND AGGREGATES, ADDITION OF WATER TO THE MIX AT THE PROJECT SITE WILL NOT BE PERMITTED. ALL WATER MUST BE ADDED AT THE BATCH PLANT. SLUMP MAY BE ADJUSTED ONLY THROUGH THE USE OF ADDITIONAL WATER REDUCING ADMIXTURE OR HIGH RANGE WATER REDUCING ADMIXTURE.
- 15. ALL CONCRETE SHALL CONTAIN A WATER REDUCING ADMIXTURE CONFORMING TO ASTM C494, TYPE A, F OR G.
- 16. CALCIUM CHLORIDE SHALL NOT BE PERMITTED NOR SHALL ANY ADMIXTURE CONTAINING CALCIUM CHLORIDE BE PERMITTED.
- 17. ALL CONCRETE EXPOSED TO THE WEATHER OR IN A LOCATION VULNERABLE TO DEICERS SHALL CONTAIN AN AIR-ENTRAINED ADMIXTURE CONFORMING TO ASTM C260. THE AMOUNT OF ENTRAINED AIR SHALL BE 6% ±1.0%.
- 18. PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI 318. SUBMIT DRAWINGS SHOWING SEQUENCE AND DIRECTION OF POUR TO PERMIT SLAB SHRINKAGE FOR ENGINEER'S REVIEW.
- 19. WHERE CONSTRUCTION JOINTS ARE REQUIRED BUT ARE NOT INDICATED ON THE DRAWINGS, THEY SHALL BE LOCATED AT MIDSPAN OF BEAMS, SLABS, AND WALLS, AND SHALL BE SUBJECT TO REVIEW BY THE A/E OR OWNER. UNLESS OTHERWISE NOTED OR SHOWN ON THE DRAWINGS, PROVIDE A CONTINUOUS SHEAR KEY IN SLABS AND WALLS, AND A MINIMUM OF TWO CONTINUOUS HORIZONTAL KEYS IN BEAMS AND EACH JOIST. THE MINIMUM KEY SIZE SHALL BE 1 1/2" DEEP BY 1/3 THE DEPTH OR WIDTH OF THE MEMBER. AT CONCRETE SLABS ON STEEL DECK, SUPPORTED BY STEEL BEAMS, CONSTRUCTION JOINTS SHALL BE PLACED AT MIDSPAN OF DECK AND MID-WAY BETWEEN BEAMS.
- 20. ALL CONSTRUCTION JOINTS BELOW GRADE SHALL HAVE WATERSTOPS, UNLESS NOTED OTHERWISE
- 21. VERIFY WITH ARCHITECTURAL DRAWINGS FOR TOP OF STRUCTURAL SLAB, BONDED TOPPING, WEARING SLAB AND SLAB ON GRADE ELEVATIONS.
- 22. SEE ARCHITECTURAL DRAWINGS FOR LOCATION AND EXTENT OF SPECIAL FINISHES OR TREATMENTS TO CONCRETE.
- 23. COORDINATE ALL WORK RELATED TO OWNER-SUPPLIED EQUIPMENT OR EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR BY USING ONLY CERTIFIED EQUIPMENT DRAWINGS.
- 24. DETERMINE SIZE AND LOCATION OF MECHANICAL EQUIPMENT, AND MAKE PROVISIONS FOR BOLTS, SLEEVES, PADS, OPENINGS, DRAINS, ANCHOR RODS AND EMBEDDED ITEMS ETC. IN ACCORDANCE WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. THIS WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED.
- 25. PROVIDE TOOLED CONTROL JOINTS IN ALL SLABS ON GRADE WITHOUT TOOL MARKS. THE MAXIMUM SPACING OF JOINTS SHALL BE 36 TIMES THE SLAB THICKNESS IN BOTH DIRECTIONS, UNLESS OTHERWISE NOTED.

26. OPENINGS:

- OPENINGS SHOWN ARE FOR BIDDING PURPOSES ONLY. RECONCILE THEIR а. EXACT SIZES AND LOCATIONS WITH HVAC, PLUMBING, AND OTHER REQUIREMENTS BEFORE PROCEEDING WITH WORK.
- ALL SLAB OPENINGS SHALL BE LOCATED WITHIN THE MIDDLE HALF OF THE SPAN IN b. EACH DIRECTION UNLESS SPECIFICALLY APPROVED BY THE STRUCTURAL ENGINEER.
- C. OPENINGS SHALL NOT BE PROVIDED IN FRAMED SLABS, BEAMS, JOISTS, COLUMNS, AND WALLS UNLESS SHOWN ON STRUCTURAL DRAWINGS. IF ANY OPENING NOT SHOWN ON THE PLANS IS REQUIRED, SECURE APPROVAL OF THE A/E BEFORE PROCEEDING.
- PROVIDE 1/2 NUMBER OF BARS INTERRUPTED PLUS ONE TYPICAL EACH FACE OF OPENING. PROVIDE TWO #5 BARS AROUND ALL SLAB AND WALL OPENINGS, EXTENDING 2'-0" BEYOND OPENING IN EVERY DIRECTION UNLESS NOTED. OPENINGS NOT EXCEEDING 16" x16" MAY BE SLEEVED AS REQUIRED BY WORKING THE REINFORCING STEEL AROUND THEM.
- 27. REINFORCING BAR LAP SPLICES AND ANCHORAGE LENGTH SHALL CONFORM WITH TABLE MINIMUM LAP SPLICE AND ANCHORAGE DIMENSION TABLE AS PROVIDED WITHIN THESE GENERAL NOTES.
- 28. TOP LAYER OF REINFORCING STEEL IN BEAMS, SLABS, JOISTS AND FOOTINGS SHALL BE CONSIDERED TOP BARS REGARDLESS OF THICKNESS OF CONCRETE BELOW THE BARS.
- 29. MECHANICAL BAR SPLICE DEVICES THAT PROVIDE A FULL TENSION SPLICE WITH A CAPACITY OF 125 PERCENT OF THE BAR YIELD STRENGTH MAY BE USED. ALL SPLICES SHALL BE VISUALLY INSPECTED BY A QUALIFIED INSPECTOR TO VERIFY THAT THE SPLICE HAS BEEN MADE PROPERLY.
- 30. BONDBREAKER MATERIAL SHALL BE 30 POUND FELT PAPER.

REINFORCING BAR CLEARANCE TABLE									
LOCATION	CLEARANCE								
CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO EARTH OR MUD SLAB	3"								
COLUMNS AND PIERS (VERT REINF)	2"								
COLUMN TIES	1 1/2"								
WALLS INTERIOR FACE	1"								
WALLS EXTERIOR FACE #5 AND SMALLER	1 1/2"								
WALLS EXTERIOR FACE #6 AND LARGER	2"								
CURBS	1 1/2"								
SLABS ON DECK (WWF)	1"								
SLABS ON GRADE (WWF)	1/3 SLAB THICKNESS FROM TOP OF SLAB								

	REINFORCING LAP LENGTH SCHEDULES											
	F'c = 4000 P.S.I. NORMAL WEIGHT											
		OP B/	AR LI	ENG	TH (I	N.)	I O T I	-IER	BAR	LENC	<u>GTH</u>	(IN.)
		(CATE	<u>GOR</u>	Y			С	ATEC	<u> GOR</u>	7	
SIZE	1	2	3	4	5	6	1	2	3	4	5	6
3	18	18	18	18	18	18	16	16	16	16	16	16
4	26	24	24	24	24	24	20	19	19	19	19	19
5	40	32	30	30	30	30	31	25	23	23	23	23
6	57	45	40	36	36	36	44	35	31	28	28	28
7	77	62	54	43	42	42	59	48	42	33	33	33
8	102	81	71	57	51	48	78	63	55	44	39	37
9	129	103	90	72	64	55	99	79	69	56	50	42
10	163	131	114	92	82	65	126	101	88	70	63	50
11	200	160	140	112	100	80	154	123	108	86	77	62
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REINFORCING LAP LENGTH SCHEDULES												
	F'c = 4000 P.S.I. NORMAL WEIGHT											
	Τ	OP B/	AR LE	NG	ΓH (I	N.)	OTH	HER	BAR	LENC	GTH ((IN.)
BAR		(<u>ATEG</u>	<u>OR</u>	Υ		[C	<u>ATE(</u>	<u>JOR</u>	Ī	
SIZE	1	2	3	4	5	6	1	2	3	4	5	6
3	18	18	18	18	18	18	16	16	16	16	16	16
4	26	24	24	24	24	24	20	19	19	19	19	19
5	40	32	30	30	30	30	31	25	23	23	23	23
6	57	45	40	36	36	36	44	35	31	28	28	28
7	77	62	54	43	42	42	59	48	42	33	33	33
8	102	81	71	57	51	48	78	63	55	44	39	37
9	129	103	90	72	64	55	99	79	69	56	50	42
10	163	131	114	92	82	65	126	101	88	70	63	50
11	200	160	140	112	100	80	154	123	108	86	77	62
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> d, < 2	2d	1	3		3	4	ALL C)THER R	EINFOR	CING B/	ARS	
> 2d	> 2d 1 3 5 6 ALL OTHER REINFORCING BARS								≀EINFOF	CING B	ARS	

d = NOMINAL BAR DIAMETER.

BERJ A. SHAKAR AIA, NCARB, I OSB ENGIN 1100 Superior Avenue - Suit (216) 861-2020	IAN, ARCHITECT LEED AP BD+C
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1916 - CENTENNIAL PLAZA - 2016 The Cleveland Cultural Gardens Federation	STRUCTURAL GENERAL NOTES 1 OF 2
REVISIONS	
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PRECAST CONCRETE:

- 1. PRECAST CONCRETE SHALL CONFORM TO THE LATEST AMERICAN CONCRETE INSTITUTE AND THE PRESTRESSED CONCRETE INSTITUTE CODES AND STANDARDS. PCI-MNL 116 AND THE CONTRACT DOCUMENTS.
- 2. ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE IN 28 DAYS SHALL BE 5000 PSI.
- 3. PRECAST UNITS MAY BE EITHER NORMAL WEIGHT CONCRETE OR LIGHT WEIGHT CONCRETE.
- 4. ALL CONCRETE USED IN THE PRECAST UNITS SHALL CONTAIN AN AIR ENTRAINING ADMIXTURE CONFORMING TO ASTM C260. THE AMOUNT SHALL BE 6% ± 1%.
- 5. ALL CEMENT SHALL BE TYPE I OR TYPE III. CONFORMING TO ASTM C150.
- 6. WATER REDUCING, RETARDING, ACCELERATING, AND HIGH RANGE WATER REDUCING ADMIXTURE SHALL CONFORM WITH ASTM C494.
- 7. AGGREGATES SHALL CONFORM WITH ASTM C33 OR C330. MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE 1".
- 8. WATER SHALL BE POTABLE AND FREE FROM FOREIGN MATERIALS HARMFUL TO CONCRETE AND EMBEDDED STEEL.
- 9. REINFORCING BARS: A615 GRADE 60 KSI YIELD STRENGTH, UNLESS NOTED OTHERWISE. WELDING OR TACK WELDING A615 REINFORCING STEEL SHALL NOT BE PERMITTED.
- 10. REINFORCING BARS FOR WELDED APPLICATION SHALL CONFORM WITH A706, 60KSI YIELD STRENGTH.
- 11. PRESTRESSING STRAND: ASTM A416, GRADE 270, UNCOATED, 7 WIRE STRESS RELIEVED STRAND.
- 12. WELDED WIRE FABRIC: ASTM A185.
- 13. GROUT SHALL BE A MIXTURE OF PORTLAND CEMENT, SAND, AND WATER SUFFICIENT FOR PLACEMENT AND HYDRATION.
- 14. ALL STEEL FOR CONNECTIONS SHALL BE STAINLESS STEEL ASTM A666 TYPE 304. STAINLESS STEEL BOLTS SHALL BE EQUIVALENT TO A36 IN STRENGTH AND WELDS SHALL BE IN ACCORDANCE WITH AWS D1.1. CONTINUOUS OR SPOT STRUT TYPE INSERTS COMPLETE WITH SPRING, NUT AND BOLT SHALL ALL BE STAINLESS STEEL.
- 15. HEADED STUDS SHALL CONFORM TO ASTM A108 AND MUST BE IN END STUD WELDED TO STEEL MEMBERS USING A STUD GUN.
- 16. ALL CONNECTIONS SHALL BE DESIGNED SO AS NOT TO BE EXPOSED TO WEATHER NOR TO VIEW FROM THE EXTERIOR.
- 17. MINIMUM REINFORCING SHALL BE IN ACCORDANCE WITH ACI 318.
- 18. TOLERANCES FOR THE PRECAST UNITS SHALL CONFORM WITH THE PRESTRESSED CONCRETE INSTITUTE SPECIFICATIONS.
- 19. SUBMIT SHOP DRAWINGS AND CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THE PROJECT FOR REVIEW. SHOP DRAWINGS FOR ALL MEMBERS AND CONNECTIONS MUST ACCOMPANY THE CALCULATIONS.
- 20. THE PRECAST CONCRETE MANUFACTURING PLANT SHALL BE CERTIFIED BY THE PRESTRESSED CONCRETE INSTITUTE, PLANT CERTIFICATION PROGRAM, PRIOR TO THE START OF PRODUCTION.
- 21. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION AND EXTENT OF SPECIAL FINISHES OR TREATMENTS TO EXPOSED PRECAST CONCRETE.
- 22. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING, AS REQUIRED, DURING THE ERECTION OF PRECAST UNITS.
- 23. EMBEDDED PLATES SHALL BE GALVANIZED ASTM A123 (UNO).

STRUCTURAL STEEL:

- DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE LATEST 1. AISC AND OTHER RELATED CODES, STANDARDS AND SPECIFICATIONS LISTED IN THE PROJECT SPECIFICATIONS, EXCEPT AS MODIFIED THEREIN OR ON THE DRAWINGS.
- 2. THE CONTRACTOR IS RESPONSIBLE FOR ALL MISCELLANOUS/ORNAMENTAL STEEL NOT SHOWN ON THE STRUCTURAL DRAWINGS.
- 3. STRUCTURAL STEEL:
 - ASTM A992 Fy = 50 KSI FOR ROLLED STEEL WIDE FLANGE SHAPES ASTM A36 Fy = 36 KSI FOR PLATES, BARS, RODS, CHANNELS, ANGLES UNO b.
- ASTM A53 TYPE E OR S, GRADE B FOR STEEL PIPE ASTM A500 GRADE C FOR HSS TUBING
- 4. HIGH STRENGTH BOLTS: ASTM A325 OR A490, 3/4" DIAMETER MINIMUM UNO
- 5. ANCHOR RODS: ASTM F1554, GRADE 36 UNO
- WORK STRUCTURAL DRAWINGS WITH ARCHITECTURAL, HVAC, PLUMBING, FIRE 6. PROTECTION & ELECTRICAL DRAWINGS FOR CLEARANCES, ATTACHMENTS, ETC.
- 7. ALL FABRICATION AND ERECTION WORK SHALL BE PERFORMED BY AISC CERTIFIED FABRICATORS AND ERECTORS.
- 8. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1 AND SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STANDARDS. PROVIDE MINIMUM 1/4" FILLET WELD, UNO.
- TYPICAL CONNECTION DETAILS INDICATED ON THE STRUCTURAL DESIGN DRAWINGS SHALL DICTATE THE FORM AND GEOMETRY OF THE CONNECTIONS. THE FABRICATOR SHALL DETERMINE OR VERIFY TYPE, SIZE AND NUMBER OF BOLTS, PLATE THICKNESS AND SIZES, WELD SIZES AND LENGTHS, AND ALL REQUIRED INFORMATION NOT SPECIFIED ON THE TYPICAL CONNECTION DETAILS.
- THE DESIGN OF ALL STEEL CONNECTIONS (EXCEPT PREDESIGNED CONNECTIONS THAT 10. HAVE BEEN ENGINEERED ON THESE DRAWINGS) SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THE PROJECT, EMPLOYED BY THE FABRICATOR. THE FABRICATOR'S REGISTERED PROFESSIONAL ENGINEER SHALL SUBMIT COMPLETE DESIGN CALCULATIONS FOR EACH CONNECTION. SUCH CALCULATIONS SHALL SHOW DETAILS OF THE ASSEMBLED JOINT WITH ALL BOLTS AND WELDS REQUIRED.
- 11. ALL DESIGN CALCULATIONS SHALL BE SEALED BY THE FABRICATOR'S PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OHIO. SHOP DRAWINGS SUBMITTED WITHOUT COMPLETE DESIGN CALCULATIONS WILL NOT BE REVIEWED.
- 12. WELDING ELECTRODES SHALL BE E-70XX OR BETTER. FOR WELDING SYMBOLS WITH NO LENGTH DIMENSION GIVEN, THE WELDING SHALL BE CONTINUOUS BETWEEN ABRUPT CHANGES IN DIRECTION.
- 13. ALL STRUCTURAL STEEL MEMBERS EXPOSED TO THE EXTERIOR SHALL BE GALVANIZED UNLESS NOTED OTHERWISE. THIS INCLUDES BUT IS NOT LIMITED TO MASONRY LINTELS AND SHELF ANGLES, INCLUDING BEARING PLATES AND ANCHOR BOLTS, AND ANY OTHER ITEM LISTED ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS.
- 14. UNLESS NOTED OTHERWISE, ALL PIPE AND TUBE COLUMNS SHALL BE SEAL WELDED WITH CLOSURE PLATES TO BE AIR TIGHT. ARCHITECTURAL PIPES AND TUBULAR BEAMS SHALL BE PROVIDED WITH 3/8" DIAMETER WEEP HOLES.
- 15. LOCATION OF ANCHOR RODS SHALL BE CONFIRMED BY A LICENSED SURVEYOR BEFORE ERECTION OF STEEL.
- 16. COLUMNS AND BEAMS WITH BASE, CAP OR END PLATES SHALL HAVE SQUARE CUT OR MILLED ENDS.
- 17. THE FRAMING SHALL BE ERECTED TRUE AND PLUMB. TEMPORARY BRACING SHALL BE PROVIDED AND SHALL REMAIN IN PLACE UNTIL THE LATERAL BRACING SYSTEM IS IN PLACE AND CONNECTIONS OF ALL MEMBERS ARE FINAL AND ALL DECK IS COMPLETELY ERECTED, WELDED AND SCREWED IN PLACE.
- 18. NON-METALLIC, NON-SHRINK, NON-STAINING GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES SHALL CONSIST OF A PREMIXED PRODUCT COMPLYING WITH ALL REQUIREMENTS OF CRD-C621, ASTM C827, AND C109.
- 19. ALL DISSIMILAR METALS TO BE SEPARATED BY ELECTROLYTIC SEPARATORS.

20. DO NOT PAINT:

- a. SURFACES OF CONNECTIONS INDICATED AS SLIP CRITICAL.
- b. SURFACES OF CONNECTIONS TO BE FIELD WELDED.
- SURFACES TO RECEIVE HEADED SHEAR CONNECTIONS. C
- d. MEMBERS TO BE EMBEDDED IN CONCRETE OR MASONRY.
- e. SURFACES TO RECEIVE SPRAYED ON INSULATION. f. MEMBERS TO BE GALVANIZED.

POST INSTALLED ANCHOR SYSTEMS

- 1. USE ADHESIVE ANCHOR SYSTEMS WHEN INDICATED IN DRAWINGS.
- 2. ADHESIVE ANCHOR SYSTEMS MUST COMPLY WITH THE LATEST REVISION OF ICC-ES ACCEPTANCE CRITERIA AC308 AND HAVE A VALID ICC-ES REPORT IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE.
- DRILLING SHALL BE PERFORMED WITH A ROTARY HAMMER DRILL AND CARBIDE TIPPED DRILL BIT IN ACCORDANCE WITH INSTRUCTIONS ACCOMPANYING ADHESIVE CARTRIDGES AND APPLICABLE ICC-ESR.
- 4. BORE HOLE CLEANING PROCEDURES MUST COMPLY WITH INSTRUCTIONS ACCOMPANYING THE ADHESIVE CARTRIDGE AND APPLICABLE ICC-ESR IN ORDER TO PRODUCE A DRY, DUST-FREE HOLE.
- INJECTION OF ADHESIVE SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS ACCOMPANYING PRODUCT AND APPLICABLE ICC-ESR TO PRODUCE AN AIR-VOID FREE INJECTION.
- 6. ALTERNATE DRILLING METHODS, SUCH AS DIAMOND CORING, MUST BE APPROVED BY THE ENGINEER OF RECORD AND COMPLY WITH THE APPLICABLE ICC-ES REPORT.
- SPECIAL CONDITIONS SUCH AS WATER SATURATED CONCRETE, WATER-FILLED HOLES, 7. UNDERWATER AND OVERHEAD INSTALLATIONS MUST BE APPROVED BY THE ENGINEER OF RECORD AND COMPLY WITH THE APPLICABLE ICC-ES REPORT.
- SPECIAL INSPECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE ICC-ES REPORT AND AS PRESCRIBED BY THE APPLICABLE BUILDING CODE.
- 9. FASTENING ELEMENTS (THREADED RODS, REBAR AND INTERNALLY THREADED INSERTS) MUST BE CLEAN, DRY AND FREE OF ANY OIL OR CONTAMINANTS.

DEFFERED STRUCTURAL SUBMITTALS

- SOME STRUCTURAL SYSTEMS ARE DEFINED AS VENDOR-DESIGNED COMPONENTS PER THE STRUCTURAL DOCUMENTS. THESE ELEMENTS OF THE DESIGN ARE DEFERRED SUBMITTAL COMPONENTS AND HAVE NOT BEEN PERMITTED UNDER THE BASE BUILDING APPLICATION.
- DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT, WHO SHALL REVIEW THEM FOR GENERAL CONFORMANCE TO THE DESIGN OF THE BUILDING. THE CONTRACTOR SHALL SUBMIT THESE REVIEWED DEFERRED SUBMITTAL DOCUMENTS TO THE BUILDING OFFICIAL. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED THE DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.
- THE FOLLOWING LIST INCLUDES THE ITEMS THAT DEFINED AS DEFERRED STRUCTURAL SUBMITTAL COMPONENTS. REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND CIVIL DRAWINGS FOR ADDITIONAL SUBMITTAL COMPONENTS.
- EXTERIOR CLADDING PRECAST CONCRETE ELEMENTS

SPECIAL INSPECTIONS

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION AND TESTING PER OBC SECTION 1704. THIS WORK SHALL BE PERFORMED BY A SPECIAL INSPECTOR CERTIFIED BY THE GOVERNING MUNICIPALITY WHERE THE PROJECT IS LOCATED TO PERFORM THE TYPES OF INSPECTIONS AND TESTS SPECIFIED. THE FREQUENCY OF INSPECTIONS AND TESTING SHALL BE AS OUTLINED IN THE OBC TABLE ITEMS LISTED BELOW. DEFICIENCIES SHALL BE REPORTED DAILY TO THE CONTRACTOR. SUMMARY REPORTS SHALL BE DISTRIBUTED WEEKLY TO THE OWNER, ARCHITECT, CONTRACTOR, BUILDING OFFICIAL AND STRUCTURAL ENGINEER. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR SPECIAL INSPECTION AND TESTING.

STRUCT	FURAL TESTS AND
CONSTRUCTION MATERIAL	APPLICABLE OB SECTION/TABLE
STRUCTURAL STEEL	SECTION 1705.2.1
CONCRETE	TABLE 1705.3
SOILS	TABLE 1705.6

SPECIAL INSPECTIONS BC CHAPTER 17) ITEMS REQUIRING VERIFICATION AND INSPECTION PER AISC 360 - CHAPTER N ALL ITEMS, EXCEPT 9A, 9B, 10 AND 11 ALL ITEMS

- CONCRETE FOUNTAIN (SEE ARCH FOR DIMENSIONS)

S-2.2

SECTION SCALE: 1/2" = 1'-0" NOTES:

> 1) ALL REINFORCING TO BE EPOXY COATED. 2) SEE ARCH FOR ALL DIMENSIONS AND ELEVATIONS NOT SHOWN ON STRUCTURAL DRAWINGS.

GRADE / PAVERS SEE CIVIL AND ARCH

- GRADE / PAVERS

SEE CIVIL AND ARCH

AT CONTROL JOINT

AT CONSTRUCTION JOINT

	DESCRIPTION		
S STEEL DIVE	RTER PLATE W/ FIBERGLASS SUMP, 8" INLET		
OW LED RGBM	LIGHT W/ STAND & 9' CORD, 44 DEG OPTICS		
DW STANDPIPE UNT LEVEL SEI	AND DRAIN FITTING NSOR		
S STEEL ANTI-	-VORTEX PLATE WITH CYCOLAC SUMP, 2" OUTLET		
OP COUPLING	(FOR FILTER RETURN WATER)		
OW WITH CORD	SEALS (4), I" STUB-UP AND POTTING COMPOUND		
VMP DISCHAR STORM SEWE	IGE, R		
P (FOR DETAIL	SEE DWG F5.1)	BERJ A. SHAKARI AIA, NCARB, LI	AN, ARCHITECT EED AP BD+C
/AULT SUMP PL ITE TO SANITA	JMP DISCHARGE, RY SEWER		
		TE OF	04
	S SEE DRAWING F-3.1	S Ber	j O
		Shaka	rian ¹ X
-/		G 530	1 RCHITE
	PLUMBING NOTES:	שיבט	
VAULT SUMP	PIPING LOCATIONS ARE DIAGRAMMATIC ONLY AND		
	2 AN ASTERISK (*) INDICATES EQUIPMENT PROVIDED BY		
	ALL DIRECTIONAL CHANGES IN PIPING SHOULD BE		
α ^α	$\langle \overline{4} \rangle$ All PIPING TEES SHOULD BE EQUAL IN SIZE TO THAT		
	\frown OF THE LARGEST CONNECTED PIPE (5) ALL PIPING TO BE PIPED EQUAL IN LENGTH, ELEVATION		
₹ 4 	NUMBER OF FITTINGS, ETC. TO PROVIDE EQUAL SUPPLY AND / OR RETURN FROM FITTING OR NOZZLE		
	6 ALL PIPING TO FOUNTAIN COMPONENTS TO BE FURNISHED AND INSTALLED BY PLUMBING CONTRACTOR, INCLUDING		
	PIPE, FITTINGS, BOLTS, NUTS, GASKETS AND ANY PIPE SUPPORTS OR HANGERS.	9	Z
	ALL SUCTION PIPING SHALL BE SCHEDULE 40 PVC PRESSURE PIPE AND FITTINGS. ALL DISCHARGE PIPING	01	ΓA
- 4 	SMALLER THAN 4" SHALL BE SCHEDULE 40 PVC PRESSURE PIPE & FITTINGS. ALL DISCHARGE PIPING 4"	N	
	AND LARGER SHALL BE SCHEDULE 80 PVC PRESSURE PIPE AND FITTINGS.	tion	AL
	(B) ALL SUCTION AND DISCHARGE PIPING SHALL HAVE AN UNINTERRUPTED 2% MINIMUM SLOPE BACK TO THE VAULT	era	
	OR EQUIPMENT ROOM (WHICHEVER APPLICABLE) TO INSURE PROPER DRAINAGE DURING COLD WEATHER. ANY EXISTING	Fed	R
NASH LINE,	CONSTRUCTION SHOULD BE CORE DRILLED, ANT NEW CONSTRUCTION SHOULD BE SLEEVED TO ALLOW LINES TO RASS THROUGH WITHOUT ALTERING THE SLOPE OF THE RIPE		CI
ARY SEWER	IF A WATER TRAP IS UNAVOIDABLE, EITHER DRAIN VALVES		Ē
	BE BLOWN OUT AND PLUGGED TO AVOID FREEZING.		E
	REFERENCES ONLY.	EL] ULa	Ś
	\square ALL POOL FITTINGS AND EQUIPMENT SHALL BE LOCATED	EF	Ľ
7 (FOR DWG F5.1)	TO PROVIDE ACCESSIBILITY AFTER ALL ARCHITECTURAL COMPONENTS ARE COMPLETE.	E E CK	
	ELECTRICAL NOTES:	RO [T elan	II
	ALL METAL IN CONCRETE MUST BE GROUNDED WITH #8 \bigwedge BARE COPPER WIRES TO REBAR. IF REBAR IS EPOXY	Ieve	
	COATED OR NOT USED, INSTALL GROUND ROD, AND GROUND FITTING TO GROUND.	e C	
	ALL EQUIPMENT, DEVICES AND COMPONENTS ARE TO BE INSTALLED IN ACCORDANCE WITH THE NEC AND ANY	Lh L	TT/
	UTHER APPLICABLE CODES. THE ROUTES, LOCATIONS, ETC.INDICATED ARE DIAGRAMATIC AND IT IS THE INTENT THAT THESE ARE INSTALLED IN ACCORDANCE WITH THE	[0]	
$\tilde{\mathbf{x}}$	APPLICABLE CODES.NY OTHER APPLICABLE CODES.	6	Ō
	BE RED BRASS PIPE (R.B.P.).		
	AN ASTERISK 'T INDICATES EQUIPMENT PROVIDED BY HYDRO DRAMATICS, ALL ELSE BY FOUNTAIN CONTRACTOR.	DEVIDIONO	
σ ^Δ ΄	ALL CONDUIT \ ELECTRICAL PENETRATIONS MUST BE	REVISIONS	
	$\cancel{6}$ All wire inside conduit should be than copper.		
4 4	JUNCTION BOXES MUST BE INSTALLED LEVEL, HAVE SEALED CONDUIT ENTRANCES, AND BE FILLED WITH AN		
	APPROVED POTTING COMPOUND.		
44	ALL CONDULT AND WIRING TO FOUNTAIN COMPONENTS		
4 	SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.		
· • • • • • • • • • • • • • • • • • • •	CONDUIT LOCATIONS ARE DIAGRAMMATIC ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION REFERENCE		
	DO NOT SCALE DRAWINGS.	DRAWN DEH	SCALE 1/2" = 1'-0"
	$\frac{12}{12}$ PLUMBING COMPONENTS ARE SHOWN FOR LOCATION	DATE	PROJECT NO.
	ALL ELECTRICAL FITTINGS AND EQUIPMENT SHALL BE	12/15/2018	
MLY,	LOCATED TO PROVIDE ACCESSIBILITY AFTER ALL ARCHITECTURAL COMPONENTS ARE COMPLETE.		SHEET NO.
D	$\cancel{14}$ ALL DMX WIRING TO BE 2 PAIR #24 AWG BELDEN Y64114 DMXFLEX OR APPROVED EQUAL.		F-1.1

- BERJ A. SHAKARIAN, ARCHITECT AIA, NCARB, LEED AP BD+C OF **B**eri Α. **S**haka**r**ian **5**30**1** 9 SNO 01 ede PARK PL LER 3 - 3 \mathbf{F} TE H E le C 0 \bigcirc 5 REVISIONS
- DRAWN SCALE AS SHOWN DEH DATE PROJECT NO. 12/15/2018 SHEET NO.

F-5.1

PLUMBING NOTES

- 1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY STATE AND LOCAL CODES.
- 2. ANY EXISTING CONDITIONS SHOWN ON DRAWINGS REFLECT INFORMATION FURNISHED BY THE OWNER AND ARE ACCURATE TO THE BEST KNOWLEDGE OF THE ENGINEER. FIELD CONDITIONS MAY VARY FROM THOSE SHOWN ON DRAWINGS. THE CONTRACTOR IS TO MAKE ARCHTECT/OWNER'S REPRESENTATIVE AWARE OF ANY DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO COMMENCING WORK.
- 3. PRIOR TO COMMENCING WORK, PLUMBING CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF SERVICES, INVERT ELEVATIONS OF UNDERFLOOR SANITARY LINES, AND SIZES OF PIPING TO BE RE-USED.
- 4. CONTRACT DOCUMENT DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- 5. INSTALL ALL PLUMBING FIXTURES, EQUIPMENT, AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE 6. SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
- COORDINATE CONSTRUCTION OF ALL PLUMBING WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- COORDINATE EXACT LOCATIONS OF ALL GAS, COLD WATER, AND MAKE-UP WATER CONNECTIONS TO HVAC EQUIPMENT AND EXACT LOCATIONS OF FLOOR AND HUB DRAINS FOR HVAC EQUIPMENT WITH THE HVAC CONTRACTOR PRIOR TO INSTALLATION.
- 9. ALL PLUMBING WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO OWNER.
- 10. VERIFY EXACT LOCATIONS OF ALL FLOOR AND ROOF DRAINS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR PROPER PLACEMENT WITH RESPECT TO SLOPES. COORDINATE THE INSTALLATION WITH THE APPROPRIATE CONTRACTOR.
- 11. UNLESS OTHERWISE INDICATED, PLUMBING WORK STOPS AT A POINT 5'-0" OUTSIDE THE BUILDING. COORDINATE EXACT LOCATION INCLUDING INVERT ELEVATION WITH SITE UTILITY CONTRACTOR.
- 12. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE TO UNDERSIDE OF PIPES AND SUSPENDED EQUIPMENT THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
- 13. ALL TESTS SHALL BE COMPLETED BEFORE ANY PLUMBING EQUIPMENT OR PIPING INSULATION IS APPLIED.
- 14. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- 15. CONCRETE HOUSEKEEPING PADS TO SUIT PLUMBING EQUIPMENT SHALL BE SIZED AND LOCATED BY THE PLUMBING CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 4 INCHES. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4 INCHES ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO COORDINATE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS WITH GENERAL CONTRACTOR & WITH APPROVAL OF THE OWNER'S REPRESENTATIVE.
- 16. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR.
- 17. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE VALVES AND OTHER CONCEALED PLUMBING EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO GENERAL CONTRACTOR FOR INSTALLATION.
- 18. ALL EQUIPMENT, PIPING, ETC. SHALL BE SUPPORTED AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
- 19. PROVIDE FLEXIBLE CONNECTIONS IN ALL PIPING SYSTEMS CONNECTED TO PUMPS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AS CLOSE TO THE EQUIPMENT AS POSSIBLE OR AS INDICATED ON THE DRAWINGS.

- SUSPENDED LOAD IN EXCESS OF 400 LBS.
- PIPE BY GRAVITY. 2" PIPING SHALL BE RUN AT 2% MINIMUM SLOPE.
- PIPING AND TO THE INVERT OF ALL GRAVITY PIPING.
- 23. ADJUST SEWER INVERTS TO KEEP TOPS OF PIPE IN LINE WHERE PIPE SIZE CHANGES.
- MAINS AND A MINIMUM OF 3'-0" OF GROUND COVER OVER ALL UNDERGROUND SEWERS AND DRAINS OUTSIDE OF BUILDING.
- BRANCHES.
- APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
- FOR THE PIPE DROPS SHALL BE USED TO THE LAST FIXTURE.
- WINDOWS.
- VALVES AT THE BOTTOM OF ALL RISERS AND LOW POINTS.
- AND SHALL BE ADJUSTED FOR SMOOTH AND EASY OPERATION.
- 31. LEVEL.
- 32. PROVIDE ALL PLUMBING FIXTURES AND EQUIPMENT WITH ACCESSIBLE STOPS.
- THAN 4 INCHES.
- ADJUSTABLE STOPS (MEMORY STOPS).
- OTHERS SHALL HAVE DEDICATED TRAP PRIMERS.
- ROOMS.
- FIXTURES PROVIDED BY OTHER CONTRACTORS.
- OPTIONS SHALL TAKE PRECEDENCE.
- 39. ALL PLUMBING WORK IS FOR ALTERNATE #1 FOUNTAIN ASSEMBLY.

20. CONTRACTOR TO INFORM THE STRUCTURAL ENGINEER IN WRITING OF ANY SINGLE

21. RUN ALL SANITARY AND STORM PIPING WITH 1% MINIMUM GRADE UNLESS OTHERWISE NOTED. HORIZONTAL VENT PIPING SHALL BE GRADED TO DRIP BACK TO SOIL OR WASTE

22. ELEVATIONS AS SHOWN ON THE DRAWINGS ARE TO THE CENTERLINE OF ALL PRESSURE

24. MAINTAIN A MINIMUM OF 4'-6" OF GROUND COVER OVER ALL UNDERGROUND WATER

25. PROVIDE SHUTOFF VALVES IN ALL DOMESTIC HOT AND COLD WATER PIPING SYSTEM

26. INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER

27. WHERE DOMESTIC COLD AND HOT WATER PIPING DROPS INTO A CHASE, THE SIZE SHOWN

28. INSTALL ALL PIPING WITHOUT FORCING OR SPRINGING AND CLEAR OF DOORS AND

29. ALL ABOVE GROUND PIPING SHALL GRADE TO LOW POINTS. PROVIDE HOSE END DRAIN

30. ALL VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE FULL SIZE (FULL PORT) OF PIPE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT AND CONTROLS

PROVIDE CHAINWHEEL OPERATORS FOR ALL VALVES IN EQUIPMENT ROOMS MOUNTED GREATER THAN 7'-0" ABOVE FLOOR LEVEL; CHAIN SHALL EXTEND TO 5'-0" ABOVE FLOOR

33. PROVIDE CLEANOUTS IN SANITARY AND STORM DRAINAGE SYSTEMS AT ENDS OF RUNS, AT CHANGES IN DIRECTION, NEAR THE BASE OF STACKS, EVERY 100 FEET IN HORIZONTAL RUNS AND ELSEWHERE AS INDICATED. ALL CLEANOUTS SHALL BE FULL SIZE OF PIPE FOR PIPE SIZES 4 INCHES AND SMALLER AND SHALL BE 4 INCHES FOR PIPE SIZES LARGER

34. ALL BALANCING VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM

35. ALL FLOOR DRAINS AND FLOOR SINKS SHALL BE TRAP PRIMED. FLOOR DRAINS IN TOILET ROOMS SHALL BE PRIMED THROUGH THE NEAREST WATER CLOSET FLUSH VALVE. ALL

36. WATER AND DRAIN PIPING SHALL NOT BE RUN THROUGH OR ABOVE ELECTRICAL SWITCH GEAR OR ROOMS, ELEVATOR SHAFTS, ELEVATOR MACHINE ROOMS, OR TELEPHONE

37. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COMPONENTS, ADAPTERS, AND FITTINGS TO MAKE FINAL CONNECTIONS TO ALL PLUMBING FIXTURES AS WELL AS

38. THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY; WHATEVER IS CALLED FOR IN ONE SHALL BE REQUIRED AS IF CALLED FOR IN BOTH. WHERE CONFLICTS BETWEEN THE SPECIFICATIONS AND DRAWINGS MAY OCCUR, THE MOST COSTLY OF THE TWO

PLUMBING ABBREVIATIONS

		<u> </u>	
AD	AREA DRAIN	LF	LAVATORY FAUCET
AFF	ABOVE FINISHED FLOOR	MB	MOP BASIN
AFG	ABOVE FINISHED GRADE	NO	NORMALLY OPEN
AG	AIR GAP	NC	NORMALLY CLOSED
BFF	BELOW FINISHED FLOOR	NPS	NOMINAL PIPE SIZE
BFG	BELOW FINISHED GRADE	PC	PLUMBING CONTRACTOR
BFP	BACKFLOW PREVENTER	PD	PUMP DISCHARGE
BOP	BOTTOM OF PIPE	PRV	PRESSURE REDUCING VALVE
CA	COMPRESSED AIR	PS	PREFAB SHOWER STALL
CO	CLEANOUT	PSIG	POUNDS PER SQUARE INCH
CW	COLD WATER (DOMESTIC)	PVC	POLYVINYL CHLORIDE
DCDA	DOUBLE CHECK DETECTOR	RD	ROOF DRAIN
DD	DECK DRAIN	- RPBFP	REDUCED PRESSURE BACKFLOW PREVENTER
DN	DOWN		
DS	DOWNSPOUT	- RPDA	ASSEMBLY
DWH	DOMESTIC WATER HEATER	RP	HOT WATER RECIRCULATION PUMP
DWG(S)	DRAWING(S)	RRW	RECYCLED RAINWATER
DWV	DRAIN, WASTE, AND VENT	SAN	SANITARY
ED	EMERGENCY ROOF DRAIN	SH	SHOWER FAUCET
EDS	EMERGENCY DOWNSPOUT	SI	SEDIMENT INTERCEPTOR
EEW	EMERGENCY EYEWASH	SR	SHOWER RECEPTOR
EWC	ELECTRIC WATER COOLER	SS	SERVICE SINK
FCO	FLOOR CLEANOUT	SV	STACK VENT
FCW	FILTERED COLD WATER	TD	TRENCH DRAIN
FD	FLOOR DRAIN	TMV	THERMOSTATIC MIXING VALVE
FF	FINISHED FLOOR	TP	TRAP PRIMER
FFD	FUNNEL FLOOR DRAIN	TW	TEMPERED WATER
FG	FINISHED GRADE	TYP	TYPICAL
FHW	FILTERED HOT WATER	UG	UNDERGROUND
FS	FLOOR SINK	UR	URINAL
G	NATURAL GAS	V	VENT
GC	GENERAL CONTRACTOR	VS	VENT STACK
GW	GREASE WASTE	VTR	VENT THROUGH ROOF
HB	HOSE BIB	W	WASTE
HD	HUB DRAIN	WC	WATER CLOSET
HW	HOT WATER (DOMESTIC)	WCO	WALL CLEANOUT
HWR	HOT WATER RECIRC.	WH	WALL HYDRANT (FREEZEPROOF)
IE	INVERT ELEVATION	WS	WASTE STACK
IW	INDIRECT WASTE		
IWH	INSTANTANEOUS WATER HEATER (ELECTRIC)		

* CERTAIN ABBREVIATIONS LISTED ABOVE MAY NOT APPLY TO THIS PROJECT

PLUMBING PIPING LEGEND

SYMBOL	DESCRIPTION
#" <u>UG SAN</u>	SANITARY UNDERGROUND
#" SAN	SANITARY ABOVEGROUND
<u>#" \/</u>	SANITARY VENT
#" ST	STORM ABOVEGROUND
<u>#" UG ST</u>	STORM UNDERGROUND
#" ES	EMERGENCY STORM
#" CW	DOMESTIC COLD WATER
#" HW	DOMESTIC HOT WATER (°F AS NOTED)
#" HWR	DOMESTIC HOT WATER RECIRC
	RECYCLED RAINWATER
G	NATURAL GAS
· · · ·	PERFORATED PVC FOUNDATION DRAIN
	EXISTING TO BE REMOVED

* CERTAIN ITEMS IN THE LEGEND ABOVE MAY NOT APPLY TO THIS PROJECT. DARK PIPING INDICATES NEW PIPING AND LIGHT INDICATES EXISTING.

PIPING & VALVE LEGEND

_	——⋈———	GATE VALVE
	X	GLOBE VALVE
_	ю	BALL VALVE
		BUTTERFLY VALVE
_	₩	PLUG VALVE
	₩	NEEDLE VALVE
_	Ň	CHECK VALVE / BACK WATER VALVE
		WYE STRAINER
_	₩ ₩	THREE-WAY VALVE
_		MODULATING CONTROL VALVE
-	口 ————————————————————————————————————	TWO POSITION CONTROL VALVE
_	¥	THREE-WAY MODULATING CONTROL VALVE
_		THREE-WAY TWO POSITION CONTROL VALVE
		MOTOR OPERATED VALVE
_	Q	SOLENOID VALVE
	Ř	PRESSURE REGULATING VALVE
_	X	PRESSURE REDUCING VALVE
		PRESSURE RELIEF VALVE
_		BACK FLOW PREVENTOR
		FLEXIBLE CONNECTION
_	——₿	WATER BALANCE VALVE/CIRCUT SETTER
		UNION
_		FLANGED CONNECTION FOR EQUIPMENT REMOVAL
_		BLIND FLANGE
_]	CAP OR PLUG
	0	QUICK CONNECTOR
_		ELBOW - TURNED DOWN
_	O	ELBOW - TURNED UP
_		TEE - DOWN
_	O	TEE - UP
_		TOP CONNECTION
		BOTTOM CONNECTION
_	⊳	REDUCER
_		FLOOR DRAIN WITH TRAP
_		FLOOR SINK WITH TRAP
	———►	SHOWER HEAD
		THERMOMETER WITH THERMOWELL
	Ø X	PRESSURE GAUGE VALVE SHUTOFF
_		DRAIN - 3/4 INCH BALL VALVE WITH HOSE END CONNECTION WITH BRASS CAP
_	Ъ Ч	VENT - 1/2 INCH BALL VALVE WITH HOSE END CONNECTION WITH BRASS CAP
_	A OR JL	VENT THRU ROOF
_	\	PIPE BREAK
	M	WATER OR NATURAL GAS METER
	$\mathbf{\Theta}$	CONNECT TO EXISTING
	\bigcirc	LIMIT OF DEMOLITION
	-	

BERJ A. SHAKARIAN, ARCHITECT AIA, NCARB, LEED AP BD+C OSBORN ENGINEERING 00 Superior Avenue - Suite 300 | Cleveland, OH 44114 (216) 861-2020 www.osborn-eng.c **DI** S.E. E **52** X **NTE** reland RO **IBI** ND E 0 5 REVISIONS DRAWN SCALE SPE SEE PLAN DATE PROJECT NO. J20170781.000 12/15/2018 SHEET NO.

* CERTAIN ABBREVIATIONS LISTED ABOVE MAY NOT APPLY TO THIS PROJECT

PLUMBING SPECIFICATIONS

A. SELECT REFERENCES DEFINITIONS

AHRI - AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE **ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE INTERNATIONAL** ASHRAE - AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS

ASSE - AMERICAN SOCIETY OF SANITARY ENGINEERING

ASME - AMERICAN SOCIETY OF MECHANICAL ENGINEERS INTERNATIONAL ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS INTERNATIONAL **AWWA** - AMERICAN WATER WORKS ASSOCIATION

EPA - U.S. ENVIRONMENTAL PROTECTION AGENCY

ICC IPC - INTERNATIONAL CODE COUNCIL INTERNATIONAL PLUMBING CODE MSS - MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY

MSS SP-58 (2009) - PIPE HANGERS AND SUPPORTS - MATERIALS, DESIGN AND MANUFACTURE, SELECTION, APPLICATION, AND INSTALLATION

- MSS SP-69 (2003 NOTICE 2012) PIPE HANGERS AND SUPPORTS SELECTION AND APPLICATION (ANSI APPROVED AMERICAN NATIONAL STANDARD)
- **NFPA** NATIONAL FIRE PROTECTION ASSOCIATION NSF-61 - NSF/ANSI STANDARD 61: DRINKING WATER SYSTEM COMPONENTS
- HEALTH EFFECTS
- **PDI** PLUMBING AND DRAINAGE INSTITUTE

UL - UNDERWRITERS LABORATORIES

B. SUBMITTALS

- PRODUCT DATA ALL EQUIPMENT, FIXTURES, PIPING, PIPING ACCESSORIES AND PIPING INSULATION.
- 2. TEST REPORTS PRESSURE TESTS, FLUSHING AND DISINFECTION, TEST OF BACKFLOW PREVENTION ASSEMBLIES.
- 3. OPERATION AND MAINTENANCE DATA INSTALLATION, OPERATION AND MAINTENANCE MANUALS OF ALL SPECIFIED EQUIPMENT, FIXTURES, PIPING, PIPING ACCESSORIES AND PIPING INSULATION. FURNISH 2 BOOKS AND 2 CD'S OF BOOK.

C. PIPE AND FITTINGS

- SHALL COMPLY WITH NSF-61.
- 2. DOMESTIC WATER
- a. UNDERGROUND SERVICE 2 INCH AND SMALLER" TYPE "K" SOFT COPPER TUBE WITHOUT JOINTS (ASTM B88).
- BUILDING SEWERS AND DRAINS "UNDERGROUND" (STORM AND SANITARY SEWERS TO 5'-0" OUTSIDE BUILDING WALLS - SOLD-WALL SCHEDULE 40 PVC CUT STEEL PIPE SLEEVES 1 INCH LARGER THAN OUTSIDE DIAMETER OF PIPE, PIPE, PVC SOCKET FITTINGS, AND SOLVENT-CEMENTED JOINTS.
- 4. FITTINGS FOR GALVANIZED STEEL PIPE 150 PSIG STEAM WORKING PRESSURE, GALVANIZED MALLEABLE IRON SCREWED FITTINGS.
- 5. FITTINGS FOR COPPER PIPE WROUGHT COPPER SOLDER JOINT TYPE ASTM B16.22, WHERE SILVER BRAZING ALLOY IS USED TO JOIN PIPE AND FITTINGS, FITTINGS TO BE SUITABLE FOR BRAZING.
- 6. VALVES a. PROVIDE ALL VALVES OF THE SAME MANUFACTURER WHERE POSSIBLE. MANUFACTURERS: APOLLO. MILWAUKEE. NIBCO. HAMMOND. OR WATTS. ALL VALVES TO BE OF DOMESTIC MANUFACTURE.
- b. VALVES IN WATER PIPING 2 INCHES AND SMALLER: TWO-PIECE BALL VALVES WITH CAST BRONZE BODY, TEFLON SEATS, CONVENTIONAL PORT, BLOW-OUT PROOF STEM, ADJUSTABLE PACKING GLAND, CHROME PLATED SOLID BRONZE BALL, SOLDERED OR THREADED ENDS, MINIMUM 150 WSP, 600 WOG. MILWAUKEE BA-150.
- c. VALVES IN WATER PIPING 2-1/2 INCHES AND LARGER: BUTTERFLY TYPE, CLASS B CAST IRON BODY, STAINLESS STEEL STEM, ALUMINUM BRONZE DISC, AND EPDM LINER; 175 WOG. LUG TYPE WITH LUG DRILLED AND TAPPED, EXTENDED NECK.
- d. HORIZONTAL CHECK VALVES 2 INCHES AND SMALLER: SWING TYPE DESIGN, CLASS 125, 200 WOG, WITH BRONZE BODY AND CAP WITH THREADED OR SOLDERED ENDS. CONFORM TO ASTM B62. MILWAUKEE 509 OR 1509.
- e. HORIZONTAL CHECK VALVES 2-1/2 INCHES AND LARGER: SWING TYPE DESIGN, CLASS 125, 200 WOG, CAST IRON BODY, FLANGED ENDS, BRONZE TRIM AND BOLTED CAP CONFORMING TO ASTM A126, CLASS B. MILWAUKEE F2974.
- f. VERTICAL CHECK VALVES 2 INCHES AND SMALLER: 250 WOG. CENTER GUIDED, SILENT, NON-SLAM TYPE. BRONZE BODY, SPRING, AND DISC HOLDER, THREADED ENDS. METRAFLEX 700.
- g. VERTICAL CHECK VALVES 2-1/2 INCHES AND LARGER: 125 POUND FLANGED ENDS, WAFER STYLE, SILENT TYPE, CAST IRON BODY, BRONZE TRIM, STAINLESS STEEL SPRING. METRAFLEX 900.
- h. VALVES FOR USE IN GROOVED PIPING SYSTEMS: REFER TO GROOVED PIPING SYSTEM SPECIFICATION.

7. STRAINERS

a. 2 INCHES AND SMALLER, 'Y' TYPE PIPE LINE STRAINER, BRASS OR BRONZE BODY, THREADED ENDS, 304 STAINLESS STEEL SCREEN WITH 20 MESH OPENINGS, 400 PSIG AT 210 DEGREE F. COMPLETE WITH SOLID RETAINER CAP AND GASKET. WATTS SERIES 777 OR EQUIVALENT BY CLA-VAL, CONBRACO, FEBCO, OR WILKINS.

- UNIONS
- a. UNIONS IN STEEL PIPING 2 INCHES AND SMALLER, MALLEABLE IRON, GROUND JOINT BRASS TO IRON SEAT SUITABLE FOR 175 PSI WORKING PRESSURES.
- b. UNIONS IN COPPER PIPING 2 INCHES AND SMALLER, CAST BRASS SOLDER FITTINGS WITH MACHINED AND LAPPED SEATS SUITABLE FOR 175 PSI WORKING PRESSURES.
- c. UNIONS ON ALL PIPING 2-1/2 INCHES AND LARGER: USE FLANGED CONNECTIONS. GASKETS USED WITH FLANGED FITTINGS: 1/16 INCH THICK, RING TYPE, COMPRESSED GRAPHITE SHEET.
- d. WHERE GROOVED JOINT PIPING SYSTEMS ARE UTILIZED, UNIONS ARE NOT REQUIRED. COUPLINGS SHALL SERVE AS UNIONS.
- DIELECTRIC CONNECTIONS PROVIDE AT CONNECTIONS BETWEEN COPPER AND FERROUS METAL PIPING MATERIALS IN DOMESTIC COLD WATER SYSTEMS ASTM F441, SCHEDULE 80, CPVC THREADED PIPE NIPPLES, 4 INCHES MINIMUM LENGTH. PROVIDE FOR DIELECTRIC CONNECTIONS IN PIPE SIZES 2 INCHES AND SMALLER. PROVIDE AT CONNECTIONS BETWEEN COPPER AND FERROUS PIPING IN DOMESTIC HOT WATER SYSTEMS VICTAULIC CLEARFLOW DIELECTRIC WATERWAY STYLE 47. FITTING CONSISTS OF ZINC PLATED CASING WITH A CHEMICALLY INERT NSF/FDA LISTED DIELECTRIC THERMOPLASTIC LINING.

- 10. WATER HAMMER ARRESTORS -BELLOWS TYPE, WITH STAINLESS STEEL TO THE DEVICE WHERE SYSTEM PRESSURES ARE ABOVE 80PSI. ARE: JOSAM, WADE, AND ZURN.
- 11. EXPANSION COMPENSATORS:- EXC-1: FOR COPPER PIPE 2 INCHES AND DEVICE. SOLDER JOINTS. MAXIMUM WORKING PRESSURE: 150 PSIG. 1-3/4 INCH. METRAFLEX MODEL HPFF OR EQUIVALENT BY KEFLEX OR FLEXONICS.
- CONNECTORS SHALL BE CONSTRUCTED OF NEOPRENE, RUBBER, OR BRAIDED BRONZE, WITH CLASS 150 STANDARD FLANGES. FLEXIBLE TEMPERATURE OF THE INTENDED SERVICE.
- 13. PIPE GUIDES:- GUIDES CONSISTING OF STEEL SEGMENTED SPIDER SIZED OF 2 GUIDES ON EACH SIDE OF EXPANSION COMPENSATORS OR FLEXONICS.
- 14. PIPE ANCHORS: INSTALL IN CONJUNCTION WITH GUIDES.
- CONCRETE WITH TYPE 18 INSERT OR DRILLED EXPANSION ANCHOR. PROVIDE TYPE 40 INSULATION PROTECTION SHIELD FOR INSULATED PIPING.

GAUGES

PRESSURE AND VACUUM INDICATING DIAL TYPE - ELASTIC ELEMENT: ASME B40.100.

E. EQUIPMENT PADS

EXCEPT WHERE OTHERWISE NOTED, PROVIDE PADS FOR ALL FLOOR MOUNTED 1. ALL PIPES, FITTINGS, ACCESSORIES UTILIZED TO CONVEY POTABLE WATER EQUIPMENT INSTALLED UNDER THIS DIVISION. MAKE ALL EQUIPMENT PADS A MINIMUM OF 4 INCHES THICK. CONSTRUCT EQUIPMENT PADS OF 5000 POUND CONCRETE COMPLETE WITH ALL NECESSARY ANCHOR BOLTS, SLEEVES ANCHOR PLATES, WASHERS AND NUTS. SMOOTH ALL EXPOSED PORTIONS OF PADS AND BEVEL CORNERS.

SLEEVES WHERE PIPES PASS THROUGH MASONRY OR CONCRETE WALLS, SET MACHINE WITH ENDS OF SLEEVES FLUSH WITH WALL FACES. SLEEVES IN PARTITIONS OTHER THAN MASONRY OR CONCRETE WHERE FIRESTOPPING IS REQUIRED: 28 GAGE GALVANIZED STEEL SHEET. WHERE PIPES PASS THROUGH FLOORS, SET SCHEDULE 40 GALVANIZED STEEL PIPE SLEEVES 1 INCH LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE. TOP OF SLEEVE TO BE 4 INCHES ABOVE FINISHED FLOOR IN MACHINE ROOMS AND WET FLOOR LOCATIONS. WHERE PIPES ARE INSULATED, PROVIDE SLEEVES LARGE ENOUGH TO ALLOW INSULATION TO PASS THROUGH SLEEVE. CENTER PIPES IN SLEEVES. PROVIDE FIRE STOPPING BETWEEN PIPE AND SLEEVE OR OPENING AS REQUIRED TO MAINTAIN THE INTEGRITY OF THE FIRE RATING OF ALL WALLS AND FLOORS. WHERE PIPES PASS THROUGH EXTERIOR WALLS BELOW GRADE, SET SCHEDULE 40 STEEL PIPE OR MANUFACTURED CASTINGS OR SLEEVES 1-1/2 INCH LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE. MAKE THE PIPE TO WALL PENETRATION CLOSURE WITH "LINK-SEAL" AS MANUFACTURED BY THE THUNDERLINE CORP. OR METRASEAL.

G. PLUMBING IDENTIFICATION

NAMEPLATES- PROVIDE 0.125 INCH THICK MELAMINE LAMINATED PLASTIC NAMEPLATES, BLACK MATTE FINISH WITH WHITE CENTER CORE, FOR EQUIPMENT, GAGES, THERMOMETERS, AND VALVES; VALVES IN SUPPLIES TO FAUCETS WILL NOT REQUIRE NAMEPLATES. KEY NAMEPLATES TO A CHART AND SCHEDULE FOR EACH SYSTEM. FRAME CHARTS AND SCHEDULES UNDER GLASS AND PLACE WHERE DIRECTED NEAR EACH SYSTEM, FURNISH TWO COPIES OF EACH CHART AND SCHEDULE.

- SELF-ADHESIVE PIPE LABELS: PRINTED PLASTIC WITH CONTACT-TYPE, PERMANENT-ADHESIVE BACKING. PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, PIPE SIZE, AND AN ARROW INDICATING FLOW DIRECTION.
- 3. INSTALL WARNING LABELS STATING "CAUTION: NON-POTABLE WATER. DO INSULATED.

INSTALLATION

- OF OTHER EQUIPMENT OR FIXTURES. SUPPLY PIPING TO FIXTURES, ANCHORED TO PREVENT MOVEMENT.
- 2. THE WORK SHALL BE CAREFULLY LAID OUT IN ADVANCE, AND
- PIPE OPENINGS SHALL BE CLOSED WITH CAPS OR PLUGS DURING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED, ADJUSTED, AND OPERATED. SAFETY GUARDS SHALL BE PROVIDED FOR EXPOSED ROTATING EQUIPMENT.
- CUT AND WORKED INTO PLACE WITHOUT SPRINGING OR FORCING. LINES MAY BE TAKEN FROM TOP, BOTTOM, OR SIDE OF MAIN, USING CONDITIONS.
- 5. SUPPLY PIPES, VALVES, AND FITTINGS SHALL BE KEPT A SUFFICIENT

CASING AND BELLOWS, TESTED AND CERTIFIED IN ACCORDANCE WITH PDI STANDARD WH-201. PROVIDE A PRESSURE REDUCING VALVE ON THE INLET MANUFACTURER: JAY R. SMITH. OTHER ACCEPTABLE MANUFACTURERS

SMALLER. CONSTRUCTED OF A MULTI-PLY STAINLESS STEEL BELLOWS WITH CARBON STEEL SHROUD WITH AN INTERNAL, POSITIVE, ANTI-TORQUE MAXIMUM OPERATING TEMPERATURE: 500 DEGREES F. MAXIMUM STROKE:

12. FLEXIBLE CONNECTORS - FLEXIBLE CONNECTORS SHALL BE PROVIDED AT THE SUCTION AND DISCHARGE OF EACH PUMP THAT IS 1 HP OR LARGER. CONNECTORS SHALL BE LINE SIZE AND SUITABLE FOR THE PRESSURE AND

TO THE OUTSIDE DIAMETER OF THE PIPE OR INSULATION AND FREE TO MOVE AXIALLY AT THE SEGMENTED STEEL CYLINDER. PROVIDE A MINIMUM EXPANSION JOINTS AND ELSE ELSEWHERE AS INDICATED. PROVIDE GUIDES OF LENGTH RECOMMENDED BY MANUFACTURER TO ALLOW REQUIRED TRAVEL. METRAFLEX OR EQUIVALENT BY KEFLEX, FEE AND MASON OR

15. PIPE HANGERS (SUPPORTS) - PROVIDE MSS SP-58 AND MSS SP-69, TYPE 1 WITH ADJUSTABLE TYPE STEEL SUPPORT RODS, EXCEPT AS SPECIFIED OR INDICATED OTHERWISE. ATTACH TO STEEL JOISTS WITH TYPE 19 OR 23 CLAMPS AND RETAINING STRAPS. ATTACH TO STEEL W OR S BEAMS WITH TYPE 21, 28, 29, OR 30 CLAMPS. ATTACH TO STEEL ANGLES AND VERTICAL WEB STEEL CHANNELS WITH TYPE 20 CLAMP WITH BEAM CLAMP CHANNEL ADAPTER. ATTACH TO HORIZONTAL WEB STEEL CHANNEL AND WOOD WITH 9. DRILLED HOLE ON CENTERLINE AND DOUBLE NUT AND WASHER. ATTACH TO

NOT DRINK" ON ALL NON-POTABLE WATER PIPING AFTER IT HAS BEEN

THE PIPING SHALL BE EXTENDED TO FIXTURES, OUTLETS, AND EQUIPMENT. THE HOT-WATER AND COLD-WATER PIPING SYSTEM SHALL BE ARRANGED AND INSTALLED TO PERMIT DRAINING. THE SUPPLY LINE TO EACH ITEM OF EQUIPMENT OR FIXTURE, EXCEPT FAUCETS, FLUSH VALVES, OR OTHER CONTROL VALVES WHICH ARE SUPPLIED WITH INTEGRAL STOPS, SHALL BE EQUIPPED WITH A SHUTOFF VALVE TO ENABLE ISOLATION OF THE ITEM FOR REPAIR AND MAINTENANCE WITHOUT INTERFERING WITH OPERATION FAUCETS, HYDRANTS, SHOWER HEADS, AND FLUSHING DEVICES SHALL BE

UNNECESSARY CUTTING OF CONSTRUCTION SHALL BE AVOIDED. DAMAGE TO BUILDING, PIPING, WIRING, OR EQUIPMENT AS A RESULT OF CUTTING SHALL BE REPAIRED BY MECHANICS SKILLED IN THE TRADE INVOLVED.

INSTALLATION. FIXTURES AND EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT, WATER, CHEMICALS, AND MECHANICAL INJURY. UPON COMPLETION OF THE WORK, THE FIXTURES, MATERIALS,

4. PIPING SHALL BE INSTALLED AS INDICATED. PIPE SHALL BE ACCURATELY STRUCTURAL PORTIONS OF THE BUILDING SHALL NOT BE WEAKENED. ABOVEGROUND PIPING SHALL RUN PARALLEL WITH THE LINES OF THE BUILDING, UNLESS OTHERWISE INDICATED. BRANCH PIPES FROM SERVICE CROSSOVER FITTINGS REQUIRED BY STRUCTURAL OR INSTALLATION

DISTANCE FROM OTHER WORK AND OTHER SERVICES TO PERMIT NOT LESS THAN 1/2 INCH BETWEEN FINISHED COVERING ON THE DIFFERENT SERVICES. BARE AND INSULATED WATER LINES SHALL NOT BEAR DIRECTLY AGAINST BUILDING STRUCTURAL ELEMENTS SO AS TO TRANSMIT SOUND TO THE STRUCTURE OR TO PREVENT FLEXIBLE MOVEMENT OF THE LINES. WATER PIPE SHALL NOT BE BURIED IN OR UNDER FLOORS UNLESS SPECIFICALLY INDICATED OR APPROVED. CHANGES IN PIPE SIZES SHALL BE MADE WITH REDUCING FITTINGS. USE OF BUSHINGS WILL NOT BE PERMITTED EXCEPT FOR USE IN SITUATIONS IN WHICH STANDARD FACTORY FABRICATED COMPONENTS ARE FURNISHED TO ACCOMMODATE SPECIFIC ACCEPTED INSTALLATION PRACTICE. CHANGE IN DIRECTION SHALL BE MADE WITH FITTINGS.

PIPE DRAINS INDICATED SHALL CONSIST OF 3/4 INCH HOSE BIBB WITH RENEWABLE SEAT AND BALL VALVE AHEAD OF HOSE BIBB. AT OTHER LOW POINTS, 3/4 INCH BRASS PLUGS OR CAPS SHALL BE PROVIDED. DISCONNECTION OF THE SUPPLY PIPING AT THE FIXTURE IS AN ACCEPTABLE DRAIN.

- ALLOWANCE SHALL BE MADE THROUGHOUT FOR EXPANSION AND CONTRACTION OF WATER PIPE. BRANCH CONNECTIONS FROM RISERS SHALL BE MADE WITH AMPLE SWING OR OFFSET TO AVOID UNDUE STRAIN ON FITTINGS OR SHORT PIPE LENGTHS. HORIZONTAL RUNS OF PIPE OVER 50 FEET IN LENGTH SHALL BE ANCHORED TO THE WALL OR THE SUPPORTING CONSTRUCTION ABOUT MIDWAY ON THE RUN. SUFFICIENT FLEXIBILITY SHALL BE PROVIDED ON BRANCH RUNOUTS FROM MAINS AND RISERS TO PROVIDE FOR EXPANSION AND CONTRACTION OF PIPING. FLEXIBILITY SHALL BE PROVIDED BY INSTALLING ONE OR MORE TURNS IN THE LINE.
- COMMERCIAL-TYPE WATER HAMMER ARRESTERS SHALL BE PROVIDED ON HOT- AND COLD-WATER SUPPLIES AND PRECISE LOCATION AND SIZING TO BE IN ACCORDANCE WITH PDI WH 201. WATER HAMMER ARRESTERS. WHERE CONCEALED, SHALL BE ACCESSIBLE BY MEANS OF ACCESS DOORS OR REMOVABLE PANELS. COMMERCIAL-TYPE WATER HAMMER ARRESTERS SHALL CONFORM TO ASSE 1010. VERTICAL CAPPED PIPE COLUMNS WILL NOT BE PERMITTED.
- INSTALL AIR-GAP FITTINGS ON DRAINING-TYPE BACKFLOW PREVENTERS AND ON INDIRECT-WASTE PIPING DISCHARGE INTO SANITARY DRAINAGE SYSTEM.
- 10. PIPE HANGERS, INSERTS, AND SUPPORTS
- a. INSTALLATION OF PIPE HANGERS, INSERTS AND SUPPORTS SHALL CONFORM TO
- b. MSS SP-58 AND MSS SP-69, EXCEPT AS MODIFIED HEREIN.
- i. TYPES 5, 12, AND 26 SHALL NOT BE USED.
- ii. TYPE 3 SHALL NOT BE USED ON INSULATED PIPE.
- c. TYPE 18 INSERTS SHALL BE SECURED TO CONCRETE FORMS BEFORE CONCRETE IS PLACED. CONTINUOUS INSERTS WHICH ALLOW MORE ADJUSTMENT MAY BE USED IF THEY OTHERWISE MEET THE REQUIREMENTS FOR TYPE 18 INSERTS.
- d. TYPE 19 AND 23 C-CLAMPS SHALL BE TORQUED PER MSS SP-69 AND SHALL HAVE BOTH LOCKNUTS AND RETAINING DEVICES FURNISHED BY THE MANUFACTURER.
- e. FIELD-FABRICATED C-CLAMP BODIES OR RETAINING DEVICES ARE NOT ACCEPTABLE.
- f. TYPE 20 ATTACHMENTS USED ON ANGLES AND CHANNELS SHALL BE FURNISHED WITH AN ADDED MALLEABLE-IRON HEEL PLATE OR ADAPTER. g. TYPE 24 MAY BE USED ONLY ON TRAPEZE HANGER SYSTEMS OR ON
- FABRICATED FRAMES. h. TYPE 39 SADDLES SHALL BE USED ON INSULATED PIPE 4 INCHES AND
- LARGER WHEN THE TEMPERATURE OF THE MEDIUM IS 60 DEGREES F OR HIGHER. TYPE 39 SADDLES SHALL BE WELDED TO THE PIPE. i. TYPE 40 SHIELDS SHALL:
- i.a. BE USED ON INSULATED PIPE LESS THAN 4 INCHES.
- ii.b. BE USED ON INSULATED PIPE 4 INCHES AND LARGER WHEN THE TEMPERATURE OF THE MEDIUM IS 60 DEGREES F OR LESS.
- iii.c. HAVE A HIGH DENSITY INSERT FOR ALL PIPE SIZES. HIGH DENSITY INSERTS SHALL HAVE A DENSITY OF 8 PCF OR GREATER.
- iij. HORIZONTAL PIPE SUPPORTS SHALL BE SPACED AS SPECIFIED IN MSS SP-69 AND A SUPPORT SHALL BE INSTALLED NOT OVER 1 FOOT FROM THE PIPE FITTING JOINT AT EACH CHANGE IN DIRECTION OF THE PIPING. PIPE SUPPORTS SHALL BE SPACED NOT OVER 5 FEET APART AT VALVES. HORIZONTAL PIPE RUNS SHALL INCLUDE ALLOWANCES FOR EXPANSION AND CONTRACTION.
- iik. TYPE 35 GUIDES USING STEEL. REINFORCED
- POLYTETRAFLUOROETHYLENE (PTFE) OR GRAPHITE SLIDES SHALL BE PROVIDED TO ALLOW LONGITUDINAL PIPE MOVEMENT. SLIDE MATERIALS SHALL BE SUITABLE FOR THE SYSTEM OPERATING TEMPERATURES, ATMOSPHERIC CONDITIONS, AND BEARING LOADS ENCOUNTERED. LATERAL RESTRAINTS SHALL BE PROVIDED AS NEEDED. WHERE STEEL SLIDES DO NOT REQUIRE PROVISIONS FOR LATERAL RESTRAINT THE FOLLOWING MAY BE USED:
- m.PIPE HANGERS ON HORIZONTAL INSULATED PIPE SHALL BE THE SIZE OF THE OUTSIDE DIAMETER OF THE INSULATION. THE INSULATION SHALL BE 1. CONTINUOUS THROUGH THE HANGER ON ALL PIPE SIZES AND APPLICATIONS.
- n. HANGERS AND SUPPORTS FOR PLASTIC PIPE SHALL NOT COMPRESS, DISTORT, CUT OR ABRADE THE PIPING, AND SHALL ALLOW FREE MOVEMENT OF PIPE EXCEPT WHERE OTHERWISE REQUIRED IN THE CONTROL OF EXPANSION/CONTRACTION.
- o. STRUCTURAL ATTACHMENTS ATTACHMENT TO BUILDING STRUCTURE CONCRETE AND MASONRY SHALL BE BY CAST-IN CONCRETE INSERTS. BUILT-IN ANCHORS, OR MASONRY ANCHOR DEVICES. INSERTS AND ANCHORS SHALL BE APPLIED WITH A SAFETY FACTOR NOT LESS THAN 5. SUPPORTS SHALL NOT BE ATTACHED TO METAL DECKING. SUPPORTS SHALL NOT BE ATTACHED TO THE UNDERSIDE OF CONCRETE FILLED FLOOR OR CONCRETE ROOF DECKS UNLESS APPROVED BY THE STRUCTURAL ENGINEER. MASONRY ANCHORS FOR OVERHEAD APPLICATIONS SHALL BE CONSTRUCTED OF FERROUS MATERIALS ONLY.
- . PIPE CLEANOUTS -PIPE CLEANOUTS SHALL BE THE SAME SIZE AS THE PIPE EXCEPT THAT CLEANOUT PLUGS LARGER THAN 4 INCHES WILL NOT BE REQUIRED. A CLEANOUT INSTALLED IN CONNECTION WITH CAST-IRON SOIL PIPE SHALL CONSIST OF A LONG-SWEEP 1/4 BEND OR ONE OR TWO 1/8 BENDS EXTENDED TO THE PLACE SHOWN. AN EXTRA-HEAVY CAST-BRASS OR CAST-IRON FERRULE WITH COUNTERSUNK CAST-BRASS HEAD SCREW PLUG SHALL BE CAULKED INTO THE HUB OF THE FITTING AND SHALL BE FLUSH WITH THE FLOOR. CLEANOUTS IN CONNECTION WITH OTHER PIPE, WHERE INDICATED. SHALL BE T-PATTERN. 90-DEGREE BRANCH DRAINAGE FITTINGS WITH CAST-BRASS SCREW PLUGS, EXCEPT PLASTIC PLUGS SHALL BE INSTALLED IN PLASTIC PIPE. CLEANOUT TEE BRANCHES WITH SCREW PLUG SHALL BE INSTALLED AT THE FOOT OF SOIL AND WASTE STACKS, AT THE FOOT OF INTERIOR DOWNSPOUTS, ON EACH CONNECTION TO BUILDING STORM DRAIN WHERE INTERIOR DOWNSPOUTS ARE INDICATED, AND ON EACH BUILDING DRAIN OUTSIDE THE BUILDING. CLEANOUTS ON PIPE CONCEALED IN PARTITIONS SHALL BE PROVIDED WITH CHROMIUM PLATED BRONZE, NICKEL BRONZE FLUSH TYPE ACCESS COVER PLATES.

ROUND ACCESS COVERS SHALL BE PROVIDED AND SECURED TO PLUGS WITH SECURING SCREW.

- **TESTS. FLUSHING AND DISINFECTION** PRESSURE TESTS SHALL BE PERFORMED ON THE PLUMBING SYSTEM IN ACCORDANCE WITH ICC IPC.
- ROUGH IN DRAINAGE AND VENT SYSTEMS TEST SHALL INCLUDE CLOSING ALL OPENINGS IN SYSTEM AND FILLING TO THE POINT OF OVERFLOW, BUT NOT LESS THAN 10-FOOT HEAD OF WATER FOR A PERIOD OF 15 MINUTES. DURING TEST WATER LEVEL MUST NOT DROP. FINISHED PLUMBING SANITARY AND VENT TEST SHALL BE PERFORMED AFTER ALL FIXTURES ARE SET, TRAPS ARE FILLED WITH WATER AND VENT OPENINGS SEALED. INTRODUCE 1-INCH WG AIR PRESSURE INTO SYSTEM AND MAINTAIN DURING VISUAL INSPECTION OF SYSTEM FOR AND GAS OR WATER LEAKS. AIR PRESSURE MUST REMAIN CONSTANT WITHOUT INTRODUCTION OF ANY ADDITIONAL AIR DURING TEST INSPECTION.
- 3. TEST OF BACKFLOW PREVENTION ASSEMBLIES BACKFLOW PREVENTION ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF STATE OR LOCAL REGULATORY AGENCIES.
- DEFECTIVE WORK IF INSPECTION OR TEST SHOWS DEFECTS, SUCH DEFECTIVE WORK OR MATERIAL SHALL BE REPLACED OR REPAIRED AS NECESSARY AND INSPECTION AND TESTS SHALL BE REPEATED. REPAIRS TO PIPING SHALL BE MADE WITH NEW MATERIALS. CAULKING OF SCREWED JOINTS OR HOLES WILL NOT BE ACCEPTABLE.
- ALL PLUMBING AND NATURAL GAS TESTING IS REQUIRED TO BE WITNESSED

SYSTEM FLUSHING

- BEFORE OPERATIONAL TESTS OR DISINFECTION. POTABLE WATER PIPING SYSTEM SHALL BE FLUSHED WITH POTABLE WATER. SUFFICIENT WATER SHALL BE USED TO PRODUCE A WATER VELOCITY THAT IS CAPABLE OF ENTRAINING AND REMOVING DEBRIS IN ALL PORTIONS OF THE PIPING SYSTEM. THIS REQUIRES SIMULTANEOUS OPERATION OF ALL FIXTURES ON A COMMON BRANCH OR MAIN IN ORDER TO PRODUCE A FLUSHING VELOCITY OF APPROXIMATELY 4 FPS THROUGH ALL PORTIONS OF THE PIPING SYSTEM. CONTRACTOR SHALL PROVIDE ADEQUATE PERSONNEL TO MONITOR THE FLUSHING OPERATION AND TO ENSURE THAT DRAIN LINES ARE UNOBSTRUCTED IN ORDER TO PREVENT FLOODING OF THE FACILITY. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FLOOD DAMAGE RESULTING FROM FLUSHING OF THE SYSTEM. FLUSHING SHALL BE CONTINUED UNTIL ENTRAINED DIRT AND OTHER FOREIGN MATERIALS HAVE BEEN REMOVED AND UNTIL DISCHARGE WATER SHOWS NO DISCOLORATION. DRINKING WATER FOUNTAINS, TO INCLUDE ANY DEVICE CONSIDERED AS AN END POINT DEVICE BY NSF/ANSI 61, SECTION 9, SHALL BE FLUSHED A MINIMUM OF 0.25 GALLONS PER 24 HOUR PERIOD, TEN TIMES OVER A 14 DAY PERIOD.
- AFTER FLUSHING SYSTEM SHALL BE DRAINED AT LOW POINTS. STRAINER SCREENS SHALL BE REMOVED, CLEANED, AND REPLACED. AFTER FLUSHING AND CLEANING, SYSTEMS SHALL BE PREPARED FOR TESTING BY IMMEDIATELY FILLING WATER PIPING WITH CLEAN, FRESH POTABLE WATER ANY STOPPAGE, DISCOLORATION, OR OTHER DAMAGE TO THE FINISH, FURNISHINGS, OR PARTS OF THE BUILDING DUE TO THE CONTRACTOR'S FAILURE TO PROPERLY CLEAN THE PIPING SYSTEM SHALL BE REPAIRED BY THE CONTRACTOR. WHEN THE SYSTEM FLUSHING IS COMPLETE, THE HOT-WATER SYSTEM SHALL BE ADJUSTED FOR UNIFORM CIRCULATION.
- 3. FLUSHING DEVICES AND AUTOMATIC CONTROL SYSTEMS SHALL BE ADJUSTED FOR PROPER OPERATION ACCORDING TO MANUFACTURER'S INSTRUCTIONS. COMPLY WITH ASHRAE 90.1 - IP FOR MINIMUM EFFICIENCY REQUIREMENTS. UNLESS MORE STRINGENT LOCAL REQUIREMENTS EXIST. LEAD LEVELS SHALL NOT EXCEED LIMITS ESTABLISHED BY 40 CFR 141.80 (C)(1). THE WATER SUPPLY TO THE BUILDING SHALL BE TESTED SEPARATELY TO ENSURE THAT ANY LEAD CONTAMINATION FOUND DURING POTABLE WATER SYSTEM TESTING IS DUE TO WORK BEING PERFORMED INSIDE THE BUILDING.

OPERATIONAL TEST

- 1. UPON COMPLETION OF FLUSHING AND PRIOR TO DISINFECTION PROCEDURES, THE CONTRACTOR SHALL SUBJECT THE PLUMBING SYSTEM TO OPERATING TESTS TO DEMONSTRATE SATISFACTORY INSTALLATION, CONNECTIONS, ADJUSTMENTS, AND FUNCTIONAL AND OPERATIONAL EFFICIENCY. SUCH OPERATING TESTS SHALL COVER A PERIOD OF NOT LESS THAN 8 HOURS FOR EACH SYSTEM AND SHALL INCLUDE THE FOLLOWING INFORMATION IN A REPORT WITH CONCLUSION AS TO THE ADEQUACY OF THE SYSTEM:
- q. TIME, DATE, AND DURATION OF TEST.
- r. WATER PRESSURES AT THE MOST REMOTE AND THE HIGHEST FIXTURES.
- s. OPERATION OF EACH FIXTURE AND FIXTURE TRIM.
- t. OPERATION OF EACH VALVE, HYDRANT, AND FAUCET
- u. PUMP SUCTION AND DISCHARGE PRESSURES.
- v. TEMPERATURE OF EACH DOMESTIC HOT-WATER SUPPLY.
- w.OPERATION OF EACH FLOOR AND ROOF DRAIN BY FLOODING WITH WATER.
- x. OPERATION OF EACH VACUUM BREAKER AND BACKFLOW PREVENTER
- y. COMPLETE OPERATION OF EACH WATER PRESSURE BOOSTER SYSTEM. INCLUDING PUMP START PRESSURE AND STOP PRESSURE.

DISINFECTION

- AFTER ALL SYSTEM COMPONENTS ARE PROVIDED AND OPERATIONAL TESTS ARE COMPLETE, THE ENTIRE DOMESTIC HOT- AND COLD-WATER DISTRIBUTION SYSTEM SHALL BE DISINFECTED. BEFORE INTRODUCING DISINFECTING CHLORINATION MATERIAL, ENTIRE SYSTEM SHALL BE FLUSHED WITH POTABLE WATER UNTIL ANY ENTRAINED DIRT AND OTHER FOREIGN MATERIALS HAVE BEEN REMOVED.
- 2. WATER CHLORINATION PROCEDURE SHALL BE IN ACCORDANCE WITH AWWA C651 AND AWWA C652 AS MODIFIED AND SUPPLEMENTED BY THIS SPECIFICATION. THE CHLORINATING MATERIAL SHALL BE HYPOCHLORITES OR LIQUID CHLORINE. THE CHLORINATING MATERIAL SHALL BE FED INTO THE WATER PIPING SYSTEM AT A CONSTANT RATE AT A CONCENTRATION OF AT LEAST 50 PARTS PER MILLION (PPM). ISOLATE AND ALLOW SYSTEM TO STAND FOR A MINIMUM OF 24 HOURS OR FILL SYSTEM WITH A CHLORINE/WATER SOLUTION AT A CONCENTRATION OF AT LEAST 200 PPM AND ALLOW TO STAND FOR A MINIMUM OF 3 HOURS.
- FLUSH WITH CLEAN POTABLE WATER UNTIL NO CHLORINE IS PRESENT AND TEST SYSTEM FOR BIOLOGICAL CONTAMINATION. REPEAT ABOVE PROCEDURES SHOULD ANY BIOLOGICAL CONTAMINATION BE DETECTED. SUBMIT WATER SAMPLES IN STERILE BOTTLES TO THE AUTHORITY HAVING JURISDICTION.

GENERAL NOTES

ALL PLUMBING WORK IS FOR ALTERNATE #1 - FOUNTAIN ASSEMBLY.

BY THE PLUMBING INSPECTOR FOR THE AUTHORITY HAVING JURISDICTION.

BERJ A. SHAKAR AIA, NCARB, L BENGINE I 100 Superior Avenue - Suit (216) 861-2020	AN, ARCHITECT CEED AP BD+C
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1916 - CENTENNIAL PLAZA - 2016 The Cleveland Cultural Gardens Federation	PLUMBING SPECIFICATIONS
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3 WATER MAIN TRENCH DETAIL

5) PAVEMENT, SIDEWALK OR DRIVES TO BE INSTALLED IN ACCORDANCE WITH LOCAL MUNICIPALITY'S SPECIFICATIONS.

BACKFILL SHALL BE 95% STANDARD PROCTOR.

SURFACE OF THE PIPE. 4) MINIMUM COMPACTION FOR ALL SAND BEDDING BACKFILL, BACKFILL AND PREMIUM

TAMPED IN SIX (6) INCH LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL

ODOT 411. NO SLAG IS PERMITTED. 3) CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THE SAND BEDDING BACKFILL, SO AS TO AVOID SCRAPING OF THE EXTERIOR COATING, INJURING THE PIPE, DISTORTING OR MOVING THE PIPE WHEN COMPACTING THE SAME. THE SAND BEDDING BACKFILL SHALL BE

2) PREMIUM BACKFILL SHALL BE LIMESTONE SCREENINGS GRADED PER ODOT 304.02 OR

NOTES: 1) PREMIUM BACKFILL REQUIRED UNDER EXISTING OR FUTURE PAVEMENTS, SIDEWALKS, AND/OR DRIVES OR WHEN REQUIRED BY LOCAL MUNICIPALITY.

GRADE —

		PL	UMBING	EQUIPMENT SCH
MARK	COMPONENT	MFR.	MODEL	
BFP	BACKFLOW PREVENTER	WATTS	LF007	ASSE 1015 DOUBLE CHECK VALVE TESTING AND CAST IRON BODY. C
DF-1	DRINKING FOUNTAIN	HALSEY TAYLOR	4420	FREE STANDING, BI-LEVEL, PEDES BUTTON ACTIVATION. PROVIDE TR
YH-1	YARD HYDRANT	WADE	8801	BRONZE, ENCASED GROUND HYDF BREAKER. HEAVY DUTY HINGED C

1.) PREMIUM FILL MATERIALS SHALL CONSIST OF AGGREGATE MATERIAL PER SPECIFICATION SECTION 02050 AND SHALL BE PLACED IN ALL LOCATIONS UNDER OR WITHIN TWO (2) FEET OF PAVEMENT AND WITHIN TWENTY (20) FEET OF BUILDINGS.

2.) COMMON FILL MATERIAL MAY BE USED IN OTHER AREAS.

SEWER TRENCH DETAIL 2

	ELECTRICAL SYMBOL LEGEND NOTE: NOT ALL SYMBOLS ARE USED
SYMBOL	DESCRIPTION
HALF TONE LINE:	DENOTES BACKGROUND OR EXISTING
THIN SOLID LINES:	DENOTES DEVICES, EQUIPMENT, ETC. EXISTING TO REMAIN
DASHED LINES:	DENOTES DEVICES, EQUIPMENT, ETC. TO BE REMOVED
HEAVY SOLID LINES:	DENOTES NEW OR RELOCATED DEVICES, EQUIPMENT, ETC.
HEAVY PHANTOM LINES:	DENOTES NEW OR RELOCATED CONDUIT, EQUIPMENT, ETC. UNDERGROUNG OR BELOW GRADE
NP-1,3,5	HOME RUN TO PANELBOARD, CIRCUIT DESIGNATION ADJACENT TO ARROW, 'NP-1,3,5' DENOTES HOMERUN TO PANELBOARD 'NP' WITH WIRING CONNECTED TO CIRCUITS 1, 3, AND 5.
— x — x — x —	GROUND CONDUCTOR (G), UNDERGROUND ELECTRICAL CONDUCTOR (E), UNDERGROUND TELEPHONE CONDUCTOR (T)
۲	3/4-INCH BY 10 FEET 0 INCH LONG COPPER-CLAD GROUND ROD.
J	JUNCTION BOX
РВ	PULL BOX
# ^{+"HH"} m ^{+"HH"} x - YY	QUAD RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R, MOUNTED 18"A.F.F. UNLESS OTHERWISE NOTED (+HH"). PANEL # AS INDICATED (XX). CIRCUIT AS INDICATED (YY).
GFCI∯ +"HH" ∯ XX-YY	GROUND FAULT INTERRUPTER TYPE DUPLEX RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R, MOUNTED 18" A.F.F. UNLESS OTHERWISE NOTED (+HH"). PANEL # AS INDICATED (XX). CIRCUIT AS INDICATED (YY).
	SURFACE PANELBOARD 120/208 VOLT, 3-PHASE, 4-WIRE
	DISCONNECT SWITCH - NON-FUSIBLE
Ž	DISCONNECT SWITCH - FUSIBLE/BREAKER
KO KO Y	TYPICAL POLE MOUNTED FLOOD LIGHT - "X" INDICATES TYPE, "Y" INDICATES POLE NUMBER.
H	HAND HOLE. SIZE AS REQUIRED BY N.E.C.
₩ / ₩Į	METERED SERVICE DROP. REFER TO DETAILS ON DWG. E5.2.
ст ⊱	CURRENT TRANSFORMER
	TRANSFORMER
₀∕₀⊡⊷	SWITCH AND FUSE UNIT (LOW VOLTAGE)
€ STAT	CIRCUIT BREAKER, "XX" TRIP SIZE, "YY" FRAME SIZE
	FUSE
<u> </u>	GROUND

AL	TERNATE	

ABBREVIATIONS			
AC	ABOVE COUNTER	GND	GROUND
AFF	ABOVE FINISHED FLOOR	G.V.	GENSET VENDOR
AFG	ABOVE FINISHED GRADE	HSP	HOUSE SERVICE PANEL
AHU	AIR HANDLING UNIT	IP	INVERTER PANEL
AST	ABOVEGROUND STORAGE TANK	LP	LIGHTING PANEL
ATS	AUTOMATIC TRANSFER SWITCH	MCC	MOTOR CONTROL CENTER
BSI	BUILDING SYSTEM INTERFACE	MDP	MAIN DISTRIBUITON PANEL
С	CONDUIT	N.I.C.	NOT IN CONTRACT
CAC	CEILING MOUNTED CAMERA	(N)	NEW WORK
CAW	WALL MOUNTED CAMERA	NL	NIGHT LIGHT
C.B.	CIRCUIT BREAKER	PNL	PANEL
CKT	CIRCUIT	PP	POWER PANEL
СР	CONTROL PANEL	RGS	RIGID GALVANIZED STEEL
CON.	CONTRACTOR	(R)	RELOCATED
СТ	CURRENT TRANSFORMER	(R&R)	REMOVE AND RELOCATE
(D&R)	DISCONNECT AND REMOVE	(REP)	REPLACE
DDC	DIRECT DIGITAL CONTROL	RP	RECEPTACLE PANEL
DP	DISTRIBUTION PANEL	SE	SERVICE ENTRANCE
(E)	EXISTING	SWBD	SWITCHBOARD
EF	EXHAUST FAN	TP	TECHNOLOGY POWER PANEL
EG	EQUIPMENT GROUND	UC	UNDER COUNTER
EL	EMERGENCY LIGHTING	U.G.	UNDERGROUND
EMT	ELECTRICAL METALLIC TUBING	UST	UNDERGROUND STORAGE TANK
EWC	ELECTRIC WATER COOLER	UPS	UNITERRUPTABLE POWER SUPPLY
FACP	FIRE ALARM CONTROL PANEL	VP	VANDAL PROOF
GAP	GENSET ANNUNCIATOR PANEL	WIU	WHILE IN USE
GFCI	GROUND FAULT CIRCUIT INTERUPTER	WP	WEATHERPROOF

PIPE (R.B.P). VERTICALLY PLUMB. POTTING COMPOUND.

13. ALL DMX WIRING TO BE 2 PAIR #24 AWG BELDEN Y64114 DMXFLEX OR APPROVED EQUAL. 14. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL OTHER TRADES ARCHITECT, ENGINEER AND OWNER; AND WITH ARCHITECTURAL, STRUCTURAL, CIVIL, PLUMBING, FOUNTAIN, ETC SHOWN ON OTHER CONTRACT DOCUMENTS.

GENERAL ELECTRICAL DEMOLITION NOTES:

- REMOVE ALL ELECTRICAL EQUIPMENT, DEVICES, BOXES, CONDUIT AND WIRE IN THE AREA OF NEW CONSTRUCTION UNLESS OTHERWISE NOTED. CONDUIT, WIRE AND ELECTRIC DEVICES WHICH MAY PASS THRU THE AREA OF NEW CONSTRUCTION AND/OR MAY BE AFFECTED BY DEMOLITION SHALL REMAIN OR, IF REQUIRED, SHALL BE RE-WORKED TO KEEP THOSE ITEMS OPERATIONAL.
- AREAS AND SERVICES ADJACENT TO DEMOLITION AREAS SHALL BE PROTECTED FROM THE DEMOLITION PROCESS. PROTECTIVE MEASURES SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL WORK AND SHALL BE MAINTAINED CONTINUOUSLY UNTIL DEMOLITION IS COMPLETED.
- 3. ALL DEMOLITION AND MATERIAL REMOVAL OPERATIONS SHALL BE CAREFULLY AND SAFELY CARRIED OUT. ELECTRICAL CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR HIS SAFE PRACTICES AND OPERATIONS.
- PROTECTIVE MEASURES SHALL BE TAKEN DURING DEMOLITION TO PROTECT THE NEW EQUIPMENT THAT HAS BEEN INSTALLED. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY DAMAGE TO THE NEWLY INSTALLED LIGHT POLES, FIXTURES, FEEDERS, PANELBOARDS, SERVICE DROPS, ETC.
- 5. ALL ELECTRICAL, EQUIPMENT, OUTLETS, SWITCHES, ETC., AND OTHER SALVAGEABLE MATERIAL NOT OTHERWISE SPECIFIED SHALL BECOME THE PROPERTY OF THE ELECTRICAL CONTRACTOR.
- MATERIAL OF NO SALVAGEABLE VALUE INCLUDING CONDUIT, WIRE AND TRASH RESULTING FROM THE NEW & DEMOLITION WORK SHALL BE REMOVED BY THE ELECTRICAL CONTRACTOR PROMPTLY FROM THE JOB SITE AND PROPERLY DISPOSED OF IN A LEGAL MANNER. NO BURNING SHALL BE PERMITTED ON THE SITE.
- IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO CONDUCT ALL DEMOLITION IN ACCORDANCE WITH OSHA. EPA, AND ALL OTHER APPLICABLE CODES AND REGULATIONS FOR TYPE OF WORK.
- 8. IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL EXISTING UTILITIES IN WORK AREA PRIOR TO INITIATION OF DEMOLITION ACTIVITIES.
- DISCONNECT ALL WIRING AT THE POINT OF ORIGIN. ALL CONDUIT, WIRE, FITTINGS, BOXES, ETC. SHALL BE COMPLETELY REMOVED. DISCONNECTION FROM UTILITY SOURCE SHALL BE DONE BY CPP; REMOVAL OF ALL ELECTRICAL SHALL BE DONE BY CONTRACTOR.
- 10. ANY ITEM INTENDED TO BE REMOVED BUT NOT SHOWN SHALL BE VERIFIED AND REMOVED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST.
- 11. DEMOLITION DRAWINGS OF ALL DISCIPLINES MUST BE CHECKED AND ALL ASSOCIATED ELECTRICAL DEVICES OF EQUIPMENT REMOVED BY OTHERS MUST BE REMOVED.
- 12. SHIFT AND REROUTE (IF REQUIRED) ANY EXISTING CONDUIT WHICH MAY INTERFERE WITH NEW CONSTRUCTION. ALL DEVICES REMAINING MUST BE LEFT IN A CLEAN AND OPERATING CONDITION.
- 13. ALL DEMOLITION WORK SHALL BE PERFORMED IN AN ORDERLY FASHION WITHOUT ANY DAMAGE TO EXISTING STRUCTURES, SITE, SURFACES AND SYSTEMS.
- 14. COORDINATE ELECTRICAL WORK WITH OTHER TRADES AS AND WHEN REQUIRED.
- 15. TEMPORARY LIGHTING SHALL BE BY ELECTRICAL CONTRACTOR. COORDINATE ALL TEMPORARY ELECTRICAL SERVICES WITH OWNER'S SITE REPRESENTATIVE. THE EXISTING UTILITY POLE LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION. PROVIDE TEMPORARY LIGHTING DURING ALL TIMES BETWEEN WHEN THE NEW WORK HAS BEEN COMMISSIONED AND THE OLD HAS BEEN DISCONNECTED. PROVIDE TEMPORARY LIGHTING AS REQUIRED BY THE CPP, THE CITY OF CLEVELAND AND/OR ARCHITECT/ENGINEER.
- 16. THE CONTRACTOR SHALL FURNISH AND INSTALL ADDITIONAL CONDUIT AND WIRE AS REQUIRED AND EXTEND EXISTING CIRCUITING TO FIXTURES AND DEVICES WHICH REMAIN BUT WHICH MAY BE AFFECTED BY EXISTING FIXTURES AND DEVICES BEING REMOVED AND/OR RELOCATED. FULL EXTENT OF WORK REQUIRED SHALL BE FIELD VERIFIED.

GENERAL ELECTRICAL NOTES:

- 1. THE CONTRACTOR SHALL VISIT THE SITE OF THE WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THEIR PROPOSAL SHALL INCLUDE ALL CONTINGENCIES NECESSARY FOR THE COMPLETION OF THEIR WORK REGARDING SUCH EXISTING CONDITIONS.
- THERE SHALL BE NO SUBSTITUTIONS UNLESS THE CONTRACTOR HAS OBTAINED WRITTEN APPROVAL FROM THE OWNER AFTER HAVING SUBMITTED AN ALTERNATIVE PROPOSAL COMPLETE WITH A DESCRIPTION OF DEVIATION FROM THE SPECIFICATIONS AND A STATEMENT OF BENEFITS TO BE DERIVED SHOULD SUCH A PROPOSED SUBSTITUTE BE ACCEPTED.
- 3. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE, OSHA REQUIREMENTS, AND LOCAL REQUIREMENTS, ALL AS INTERPRETED BY THOSE HAVING JURISDICTION.
- BEFORE DOING ANY WORK WHICH MIGHT ENTAIL A FULL OR PARTIAL SHUTDOWN, 4 THE ELECTRICAL CONTRACTOR SHALL INFORM THE OWNER & UTILITY SO THAT A SCHEDULED SHUTDOWN ARRANGEMENT CAN BE MADE, TAKING EVERY PRECAUTION THAT THE ELECTRICAL SYSTEM IS OPERATING SATISFACTORILY. ALL UTILITY WORK SHALL BE COORDINATED WITH CPP. CPP SHALL MAKE FINAL CONNECTIONS & DISCONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED LABOR, MATERIAL, EQUIPMENT, CONDUIT, WIRE, BOXES, FIXTURES, POLES, FUSES, ETC. FOR A COMPLETE AND OPERATIONAL LIGHTING & POWER DISTRIBUTION SYSTEM.
- 5. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO SHOW THE APPROXIMATE LOCATIONS OF POLES, FIXTURES, SERVICE DROPS, CONNECTIONS, PEDESTALS, OUTLETS, CONDUIT, JUNCTION BOXES AND EQUIPMENT. DIMENSIONS PRESENTED ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND ALL DIMENSIONS. WHETHER SHOWN ON THE DRAWINGS OR SCALED, SHALL BE VERIFIED IN THE FIELD.
- 6. THE ELECTRICAL CONTRACTOR SHALL SECURE ALL PERMITS AND PAY ALL FEES THAT ARE REQUIRED BY THE APPLICABLE LOCAL AND STATE LAWS.
- 7. A CONTINUOUS CONDUIT SHALL NOT BE CONSTRUED TO SATISFY THE REQUIREMENTS FOR A GROUNDING SYSTEM. A SEPARATE GROUND WIRE SHALL BE PROVIDED INTERCONNECTING ALL EXPOSED CONDUCTIVE EQUIPMENT. TO THE COMMON GROUND BUS USING APPROPRIATE GROUND FITTINGS. GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC TABLE 250-122. THE GROUNDING CONDUCTOR MUST BE RUN WITHIN THE CONDUCTOR RACEWAY TOGETHER WITH THE SUPPLY CONDUCTOR.
- PVC COATED RIGID GALVANIZED STEEL CONDUIT SHALL BE USED FOR ALL FEEDERS ABOVE GRADE. PVC SCHEDULE-80 CONDUIT SHALL BE USED FOR ALL UNDERGROUND FEEDERS BELOW ANY PAVED OR FINISHED SURFACES. PVC SCHEDULE-40 CONDUIT MAY BE USED FOR UNDERGROUND FEEDERS IN GRASS AREA ONLY. ALL WIRING TO BE IN CONDUIT.
- CONDUIT FITTINGS, DEVICE ENCLOSURES AND ASSOCIATED ACCESSORIES SHALL BE OF CROUSE HINDS OR APPLETON MANUFACTURE.
- 10. REFER TO PVC TO RGS TRANSITION DETAIL (#3) ON DWG. E5.1 FOR TYPICAL UNDERGROUND TO EXPOSED CONDUIT TRANSITIONS.
- 11. WIRE SHALL BE COPPER TYPE THWN/THHN, 75 DEGREES C, STRANDED.
- 12. LIGHTING FIXTURES SHALL BE AS INDICATED.
- 13. INSTALL PULL BOXES, JUNCTION BOXES, SPLICE BOXES AND FITTINGS WHERE SHOWN AND AT OTHER LOCATIONS AS NECESSARY. ALL BOXES SHALL BE STAINLESS STEEL AND SHALL HAVE SCREW COVERS. ALL FITTINGS SHALL BE CAST MALLEABLE TYPE.
- 14. IDENTIFY WITH LEGIBLE AND DURABLE MARKING, EACH DISCONNECTING MEANS INDICATING ITS PURPOSE.
- 15. ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE RECEPTACLE OUTLETS USED BY THE WORKMEN SHALL BE PROTECTED BY A "GROUND FAULT INTERRUPTER".
- 16. ALL RECEPTACLES, SWITCHES AND DEVICES SHALL SHALL HAVE PANEL AND CIRCUIT NUMBER IDENTIFY WITH LEGIBLE AND DURABLE MARKING ON COVER PLATE. OWNER WILL INDICATE IF MARKINGS ARE ON THE FRONT OR BACK OF COVER

1 - FOUNTAIN ELECTRICAL NOTES:

INSTALL ALL FOUNTAIN ELECTRICAL PER MANUFACTURERS INSTALLATION INSTRUCTIONS.

2. ALL METAL IN CONCRETE MUST BE GROUNDED WITH #8 BARE COPPER WIRES TO REBAR. IF REBAR IS EPOXY COATED OR NOT USED, INSTALL GROUND ROD, GROUND FITTING TO GROUND.

ALL EQUIPMENT, DEVICES AND COMPONENTS ARE TO BE INSTALLED IN ACCORDANCE WITH THE NEC AND ANY OTHER APPLICABLE CODES, THE ROUTES, LOCATIONS, ETC INDICATED ARE DIAGRAMMATIC AND IT IS THE INTENT THAT THESE ARE INSTALLED IN ACCORDANCE WITH THE APPLICABLE CODES.

4. ANY PENETRATIONS THROUGH CONCRETE MUST BE RED BRASS

ALL CONDUIT AND ELECTRICAL PENETRATIONS MUST BE

6. ALL WIRING INSIDE CONDUIT SHALL BE THWN COPPER.

- 7. JUNCTION BOXES MUST BE INSTALLED LEVEL, HAVE SEALED CONDUIT ENTRANCES, AND BE FILLED WITH AN APPROVED
- 8. ALL LIGHTING CIRCUITS MUST HAVE SEPARATE NEUTRALS FOR GFI CIRCUITS.

9. ALL CONDUIT AND WIRING TO FOUNTAIN COMPONENTS SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.

10. CONDUIT LOCATIONS ARE DIAGRAMMATIC ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION REFERENCE.

11. PLUMBING COMPONENTS ARE SHOWN FOR LOCATION REFERENCE ONLY.

12. ALL ELECTRICAL FITTINGS AND EQUIPMENT SHALL BE LOCATED TO PROVIDE ACCESSIBILITY AFTER ALL ARCHITECTURAL COMPONENTS ARE COMPLETE.

ALTERNATE 2 - CENTENNIAL PORTAL WITH BELLS ELECTRICAL NOTES:

- THE BELLS ARE TO BE FURNISHED, INSTALLED, AND PROGRAMMED UNDER A SEPARATE CCGF CONTRACT WITH THE BELL MANUFACTURER. ROUGH-IN ALL ELECTRICAL WORK AS OUTLINED HEREIN AS PART OF ALTERNATE #2.
- 2. ALL METAL IN CONCRETE MUST BE GROUNDED WITH #8 BARE COPPER WIRES TO REBAR. IF REBAR IS EPOXY COATED OR NOT USED, INSTALL GROUND ROD, GROUND FITTING TO GROUND.
- ALL EQUIPMENT, DEVICES AND COMPONENTS ARE TO BE INSTALLED IN ACCORDANCE WITH THE NEC AND ANY OTHER APPLICABLE CODES, THE ROUTES, LOCATIONS, ETC INDICATED ARE DIAGRAMMATIC AND IT IS THE INTENT THAT THESE ARE INSTALLED IN ACCORDANCE WITH THE APPLICABLE CODES.
- ANY PENETRATIONS THROUGH CONCRETE MUST BE RED BRASS PIPE (R.B.P).
- ALL CONDUIT AND ELECTRICAL PENETRATIONS MUST BE VERTICALLY PLUMB.
- ALL WIRING INSIDE CONDUIT SHALL BE THWN COPPER OR AS DESIGNATED BY BELL MANUFACTURER.
- 7. ALL CONDUIT AND WIRING TO CENTENNIAL PORTAL BELL COMPONENTS SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
- 8. CONDUIT LOCATIONS ARE DIAGRAMMATIC ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION REFERENCE.
- 9. ALL ELECTRICAL FITTINGS AND EQUIPMENT SHALL BE LOCATED TO PROVIDE ACCESSIBILITY AFTER ALL ARCHITECTURAL COMPONENTS ARE COMPLETE.
- 10. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL OTHER TRADES ARCHITECT, ENGINEER AND OWNER; AND WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ETC SHOWN ON OTHER CONTRACT DOCUMENTS.
- 11. ITEMS FURNISHED BY BELL MANUFACTURER INCLUDE: BELLS, STRIKERS, AND BELL ELECTRICAL CONTROL ENCLOSURE. BELL ELECTRICAL CONTROL ENCLOSURE SHALL INCLUDE FLANGE MOUNTED DISCONNECT, ENVIRONMENTAL CONTROLS, LOW VOLTAGE COMPONENTS, LINE VOLTAGE COMPONENTS, CONTROLS, SOFTWARE CONTROLLER, ETC.

GENERAL ELECTRICAL NOTES CONT:

- 17. ALL LABOR AND MATERIAL FURNISHED BY THE CONTRACTOR AS PART OF THIS CONTRACT SHALL BE GUARANTEED FOR A PERIOD OF TWO YEARS FROM DATE OF ACCEPTANCE BY THE OWNER. ANY DEFECTS WHICH APPEAR WITHIN THE GUARANTEE PERIOD SHALL BE PROMPTLY REPAIRED OR REPLACED AT THE OWNER'S DISCRETION, WITHOUT ADDITIONAL COST TO THE OWNER.
- 18. ALL EQUIPMENT GROUNDS SHALL BE TERMINATED WITH COMPRESSION FITTINGS AND STAINLESS STEEL BOLTS OR IN PANEL GROUND BAR.
- 19. BEFORE DRILLING ANY HOLES IN WALLS OR FLOORS THE AREA MUST BE CHECKED FOR EXISTING EMBEDDED OBSTRUCTIONS.
- 20. IT IS RECOMMENDED THAT THE BIDDERS VISIT THE SITE FOR THIS CONTRACT AND VERIFY THE EXISTING SYSTEMS.
- 21. COORDINATE ALL NEW WORK WITH THE EXISTING ELECTRICAL SYSTEMS AND CPP.
- 22. REFERENCE CPP WO #68274.
- 23. COORDINATE ALL CONSTRUCTION OF ALL ELECTRICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, PLUMBING, FOUNTAIN, ETC SHOWN ON OTHER CONTRACT DOCUMENTS.
- 24. SUMMARY OF ALTERNATES: A. ALTERNATE 1: ADD TO BASE BID. INCLUDE ALL MATERIAL AND LABOR ASSOCIATED WITH INSTALLING, CONNECTING, EQUIPMENT, HARDWARE, ASSOCIATED WORK, ETC. WITH THE INSTALLATION OF THE FOUNTAIN.
- B. ALTERNATE 2 ADD TO BASE BID. INCLUDE ALL MATERIAL AND LABOR ASSOCIATED WITH INSTALLING, CONNECTING, EQUIPMENT, HARDWARE, ASSOCIATED WORK, ETC. WITH THE INSTALLATION OF THE BELLS.
- C. NOTE: ONLY BASE BID, ALTERNATE 1 OR ALTERNATE 2 WILL BE ACCEPTED. ALTERNATE 1 AND ALTERNATE 2 WILL NOT BOTH BE ACCEPTED.

STREET LIGHTING AND METERED POWER PANEL ELECTRICAL NOTES:

- 1. THE CONTRACTOR SHALL INSTALL THE STREET LIGHTING & METERED POWER PANEL CONDUIT SYSTEM, CONDUCTORS, PULL BOXES, LIGHT POLES, LUMINAIRES, BASES, PULLING ALL WIRES, BRACKET ARMS, ANCHOR BOLTS, CONNECTIONS, TESTING, EXCAVATION, BACKFILL, ETC FOR A COMPLETE AND OPERATIONAL SYSTEM.
- 2. THE CONTRACTOR SHALL INSTALL THE LIGHTING CONDUIT SYSTEM, CONDUCTORS, PULL BOXES, LIGHT POLE FOUNDATIONS, LIGHT POLES, LUMINAIRES, PULLING ALL WIRES, BRACKET ARMS, POWER SERVICE, METER SOCKET, METER, POWER PEDESTAL, LIGHTING CONTROLS, WEATHERHEADS, WALL MOUNTED UNDERPASS LUMINAIRES, AND ALL WIRING UP TO CPP UTILITY CONNECTION POINT.
- 3. ALL WORK SHALL BE INSTALLED BY A CITY OF CLEVELAND AND CPP QUALIFIED ELECTRICAL CONTRACTOR.
- 4. CLEVELAND PUBLIC POWER (C.P.P.) WILL MAKE ALL FINAL CONNECTIONS FOR THE STREET LIGHTING SYSTEM AND PRIVATE METERED SYSTEM TO THEIR MAINS. C.P.P. WILL RELOCATE ALL SERVICE LATERAL WIRES AS REQUIRED.THE CONTRACTOR SHALL PROVIDE ALL WORK INDICATED ON PLANS, SPECIFICATIONS AND PER CPP STANDARDS.
- 5. ALL ELECTRICAL WORK PERFORMED SHALL BE IN ACCORDANCE WITH CLEVELAND PUBLIC POWER DETAILS AND SPECIFICATIONS AND THE NATIONAL ELECTRIC CODE (NEC). CONTACT JAMES FERGUSON AT CLEVELAND PUBLIC POWER AT 216-420-7704 EXT 183 TO OBTAIN THE CURRENT C.P.P. SPECIFICATIONS, FEES, PERMITS, TESTING AND INSPECTION REQUIREMENTS.
- 6. REFERENCE CPP WO #68274 FOR THIS PROJECT.
- 7. THE CONDUIT SHALL BE PERMANENTLY MARKED ON THE OUTSIDE AT REGULAR INTERVALS WITH THE MANUFACTURER'S NAME, TRADEMARK, NOMINAL DUCT DIAMETER, TYPE AND YEAR OF MANUFACTURE.
- 8. CONDUIT COUPLINGS, CONNECTORS AND SWEEPS FOR ALL CONDUITS SHALL BE BY THE SAME MANUFACTURER AS THE CONDUITS.
- 9. PROVIDE ALL PIPE BENDS, SWEEPS, COUPLINGS, DUCT PLUGS, SPACERS, ELBOWS AND FITTINGS, BOND BREAKER, FINAL CLEANING AND MANDRELLING OF EACH CONDUIT, AND THE RISER STUB UP FOR POWER SERVICE AS SHOWN ON THE DETAIL SHEET.
- 10. PROVIDE ALL CONDUITS WITH A 400 LB PULL LINE.
- 11. PROVIDE EXPANSION FITTINGS AS REQUIRED. EXPANSION FITTINGS SHALL BE OZ TYPE AX, CROUSE HINDS TYPE XJG, APPLETON TYPE AX, OR EQUAL APPROVED BY THE ENGINEER. EACH EXPANSION FITTING SHALL PROVIDE EITHER 4 OR 8 INCHES TOTAL MOVEMENT AS SPECIFIED BY THE PLAN DETAILS AND SHALL HAVE AN EXTERNAL COPPER BONDING JUMPER, UNLESS SPECIFIED OTHERWISE BY THE PLAN DETAILS.
- 12. PROVIDE DEFLECTION COUPLINGS AS REQUIRED. DEFLECTION COUPLINGS SHALL BE OZ TYPE DX, CROUSE HINDS TYPE XD, APPLETON TYPE DF, OR EQUAL APPROVED BY THE ENGINEER. EACH DEFLECTION COUPLING SHALL HAVE AN EXTERNAL COPPER BONDING JUMPER, UNLESS SPECIFIED OTHERWISE BY THE PLAN DETAILS.
- 13. CONTRACTOR SHALL PROVIDE METER SOCKET ENCLOSURES WHERE REQUIRED. METER SOCKET ENCLOSURES SHALL MEET CPP'S SPECIFICATIONS. METER SOCKET ENCLOSURES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR; OR RELOCATED AS INDICATED ON THE PLANS.
- 14. LIGHT POLE SHALL BE ROUND TAPERED MOUNTED ON NEW BASE.
- 15. CONTRACTOR SHALL PROVIDE 2-POLE, FUSED, QUICK DISCONNECT 'Y' CONNECTOR KIT WITH 10A FUSING IN EACH POLE BASE.
- 16. CONTRACTOR SHALL PROTECT ALL EXISTING AND PROPOSED LIGHT POLES UNTIL ALL CONSTRUCTION AND DEMOLITION ACTIVITIES ARE COMPLETE. THE PROTECTION SHALL BE PROVIDED FROM GRADE TO 6'-0" ABOVE GRADE AT A MINIMUM. THE PROTECTION SHALL CONSIST OF BURLAP MATERIAL, OR EQUAL, SECURED AROUND THE POLE BASE AND SHALL PROTECT THE POLE FROM GOUGING, DENTS, SCRAPES, AND SPRAYING BY FOREIGN SUBSTANCES.
- 17. CONTRACTOR SHALL FACTORY PAINT THE NEW POLES AND FIXTURES BRONZE WITH A POWDER COATED CORROSION RESISTANT FINISH. COLOR AS SPECIFIED BY OWNER/ARCHITECT.
- 18. THE POLE AND BRACKET ARM SHALL BE FIBERGLASS AND THE COLOR SHALL BE BRONZE. THE BRACKET ARM SHALL HAVE A TWO-FOOT UPSWEEP OR AS DESIGNED ON PLANS. APPROVED PRODUCT MANUFACTURER'S ARE WHATLEY, SHAKESPEARE COMPOSITE STRUCTURES OR APPROVED EQUAL.
- 19. LUMINAIRES SHALL BE FLOOD LIGHT STYLE, MULTI-VOLT, LED, AND AS INDICATED ON PLANS. LUMINAIRE SHALL INCLUDE AN INTEGRAL 8-PIN PHOTO-ELECTRIC CELL WITH OCCUPANCY SENSOR AND DIMMING CAPABILITY. WHEN THERE IS NO OCCUPANCY, FIXTURE SHALL DIM TO 70% OUTPUT. APPROVED PRODUCTS BY GE, COOPER, KING LUMINAIRE PRODUCTS-STRESSCRETE GROUP, OR APPROVED EQUAL.
- 20. ALL LUMINAIRES, POLES, ETC. SHALL BE APPROVED BY C.P.P. PRIOR TO PURCHASE.

CPP SPECIFICATION:

D.11 ROUND, TAPERED FIBERGLASS STREET LIGHT POLES

THIS SPECIFICATION SECTION SHALL COVER STANDARD FLOOI POLES.

ALL POLES SHALL BE HOLLOW, TRUNCATED CONE OF SUITABL THICKNESS AND TAPER. THE TAPER SHALL BE UNIFORM FROM BOTTOM (ANY SECTION SHALL BE CIRCULAR). POLES SHALL H TENON TOPS.

ANY POLE PROVIDED SHALL NOT WEIGH LESS THAN 95% OF TH MANUFACTURER'S ADVERTISED OR SPECIFIED WEIGHT.

FIBERGLASS POLES FURNISHED AS PART OF THIS SPECIFICATI SHALL BE CAPABLE OF BEING FITTED AS FOLLOWS:

- 1. FLOOD LIGHT LUMINAIRE AND MAST ARM AT TOP OF POLE
- 2. UP TO THREE FLOODLIGHTS AT TOP OF POLE.
- 3. FLOOD LIGHT LUMINAIRE AT TWENTY-SEVEN (27) FEET AE BASE OF POLE.
- 4. DUPLEX RECEPTACLE AT 30 INCHES ABOVE BASE OF POL
- 5. BAND MOUNTED BANNER UTILIZING BANNER SAVING BRA (MAX. 20 SQUARE FEET FOR A SIGNAL BANNER) LOCATED AREA BETWEEN FIFTEEN (15) AND TWENTY-THREE (23) FE ABOVE THE BASE OF POLE.

D-11.1 WIND LOADING

THE POLES FURNISHED AS PART OF THIS SPECIFICATION SHAL DESIGNED IN ACCORDANCE WITH 90 MPH (30% GUST FACTOR) WIND LOADING. CERTIFIED MATHEMATICAL WIND LOAD CALCU MUST BE SUBMITTED TO C.P.P. FOR ACCEPTANCE.

D-11.2 MATERIAL

THE REINFORCING GLASS SHALL BE A COMMERCIAL GRADE OF GLASS FIBERS IN CONTINUOUS FILAMENT, WOVEN FILAMENTS, CHOPPED STRAND FORMS OR A COMBINATION OF THE SAME. GLASS FIBERS SHALL BE TREATED WITH A COUPLING AGENT COMPATIBLE WITH THE RESIN USED. THE POLE SHALL BE NON-CONDUCTIVE AND CHEMICALLY INERT. THE THERMOSETT RESIN SHALL CONTAIN ULTRAVIOLET INHIBITORS.

D-11.3 SURFACE

THE POLE EXTERIOR SURFACE SHALL BE SMOOTH AND UNIFOR TEXTURE AND COLOR SHOULD NOT CONTAIN ANY EXPOSED FI NATURAL FINISH WILL NOT BE ACCEPTED.

A NON WOVEN POLYESTER TAPE IS TO BE DOUBLE WRAPPED THE UNCURED FIBERGLASS POLE. THE POLYESTER FABRIC IS PRE-SATURATED WITH EPOXY RESIN TO IMPREGNATE THE POL INSURE A POSITIVE BOND. THE POLYESTER FABRIC TAPE IS TO APPLIED TO THE POLE TO MAINTAIN SURFACE INTEGRITY WITH SIGNIFICANT NOTICEABLE CHANGE IN APPEARANCE TO ULTRAY CHEMICALS. AND EXTREME WEATHER CONATIONS.

THE FINISH COAT SHALL BE A HIGHLY WEATHER RESISTANT, CO PIGMENTED POLYURETHANE AND SHALL HAVE A DRY FILM THIC OF 1 ½ MILS MINIMUM. COLOR INCLUDING ALL STANDARD COLO BE BRONZE (OR AS DESIGNATED BY OWNER/ARCHITECT).

THE SURFACE IS TO BE TESTED FOR A MINIMUM OF 2.500 HOU ACCELERATED TESTING IN ACCORDANCE WITH ASTM G-53, LAT REVISION. THE RESULTS SHALL INDICATE NO FIBER EXPOSURI CRAZING, OR CHECKING. THERE MAY BE ONLY SLIGHT CHALKIN COLOR MAT ONLY DULL SLIGHTLY.

D.11.4 REINFORCING

THE STANDARD STREETLIGHT POLES SHALL BE REINFORCED I AREA BETWEEN FOURTEEN (14) FEET AND TWENTY-FOUR (24) I ABOVE THE GROUND LINE TO ALLOW BAND MOUNTING OR HOL ORNAMENTS OR BANNERS.

D.11.5 DUPLEX RECEPTACLE

A WEATHERPROOF 120 V ELECTRICAL DUPLEX OUTLET SHALL INSTALLED AT THIRTY (30) INCHES ABOVE THE BASE ON THE FL LIGHT POLE.

D.11.6 POLE TOP

THE POLE TOP FOR THE STANDARD STREET LIGHT POLES IS 27 FEET IN HEIGHT AND SHALL BE EITHER 2, OR 3, 3/8" O.D. X 2 3/4" LONG HEAVY DUTY TENDON. THE TENDON SHALL BE ALUMINUM OR STEEL PERMANENTLY ATTACHED TO THE POLE SHAFT. THE TENON SHALL BE STRAIGHT WITH NO TAPER AND COATED WITH MATCHING URETHANE FINISH. STANDARD STREETLIGHT POLES SHALL ALSO BE SUPPLIED WITH A TENON CAP. ALL TENONS WILL BE SECURED WITH THREE SETS OF SCREWS.

D.11.7 PULL WIRES

POLES SHALL HAVE PULL WIRES INSTALLED TO FACILITATE INSTALLATION OF CONDUCTORS.

D.11.8 HAND HOLE

EACH POLE SHALL HAVE A HAND HOLE WITH A NON METALLIC, REMOVABLE, LOCKABLE COVER AND GASKET. THE COVER SHALL BE SECURED IN AT LEAST TWO LOCATIONS. THE COVER SHALL BE THE SAME COLOR AND TEXTURE AS THE POLE. THE HAND HOLE SHALL BE 2-1/2" X 5" FOR THE STANDARD FLOOD LIGHT POLE.

D.11.9 SHIPPING

EACH POLE SHALL BE INDIVIDUALLY WRAPPED WITH PLASTIC SHRINK WRAP FILM OR POLYBAGGED FOR PROTECTION DURING SHIPPING AND STORAGE.

D.11.10 BASE PLATE AND COVE ANCHOR BASE POLES

A ONE PIECE, STEEL (HOT DIPPED GALVANIZED) ANCHOR BASE CASTING SHALL BE PROVIDED WHICH IS PERMANENTLY ATTACHED TO THE BOTTOM OF THE POLE. THE BASE SHALL BE ADHESIVELY BONDED TO THE POLE AND SHALL BE MECHANICALLY LOCKED TO THE POLE IN SUCH A MANNER THAT IT CANNOT COME LOOSE EVEN IF THE ADHESIVE BOND FAILS. THE ANCHOR BASE CASTING SHALL BE CAPABLE OF COVERING A BOLT CIRCLE RANGE OF 11" TO 15" A REMOVABLE CLAM-SHELL STYLE COVER OF THE SAME MATERIAL AND COLOR AS THE POLE SHALL BE PROVIDED THAT COMPLETELY

SURROUNDS THE BASE. HARDWARE SHALL BE STAINLESS STEEL.

D.11.11 ANCHOR RODS FOR ANCHOR BASE POLES ONE SET OF FOUR (4) GALVANIZED 1 INCH ANCHOR RODS 40 (36+4)

D LIGHT	INCHES IN LENGTH, EACH WITH TWO NUTS AND TWO WASHERS, SHALL BE FURNISHED WITH EACH POLE ASSEMBLY. ANCHOR BOLTS SHALL CONFORM TO LATEST ASTM SPECIFICATION FOR HIGH STRENGTH, GALVANIZED ANCHOR BOLTS, 50,000 PSI MINIMUM.
	D 11 12 LOADING TEST
LE WALL M TOP TO IAVE HE	THE MANUFACTURER SHALL PROVIDE ONE (1) SET OF SHOP DRAWINGS FOR THE POLE AND CERTIFIED TEST DATA FOR DEFLECTION AND ULTIMATE STRENGTH SHALL ALSO BE SUBMITTED WITH THE BID. ALL TESTING IS TO BE PERFORMED ON THE POLE WITH THE APPROPRIATE SIZE HAND HOLE LOCATED ON THE COMPRESSION SIDE.
ION	1. A HORIZONTAL LOAD IS TO BE APPLIED ON 100 POUND INCREMENTS AT A POINT 12 INCHES FROM THE TOP UNTIL AN ULTIMATE TOP LOAD OF 1,400 POUNDS HAS BEEN APPLIED. THE POLE SHALL WITHSTAND A MINIMUM OF 1,400 POUNDS OF HORIZONTAL LOAD BEFORE FAILURE.
.E.	
BOVE LE.	UNDER THE SAME TEST PROCEDURE, THE MAXIMUM DEFLECTION UNDER 100 POUND LOADING SHALL BE 4% OF THE ABOVE GROUND LENGTH OF THE POLE.
ACKETS D IN THE EET	 A HORIZONTAL LOAD IS TO BE APPLIED IN 100 POUND INCREMENTS AT A POINT 12 INCHES FROM THE TOP OF THE POLE. THE LOAD IS TO BE HELD FOR FIVE (5) MINUTES WITHOUT POLE FAILURE AND THE POLE IS THE HAVE NO MORE THAN 1% PERMANENT DEFLECTION AFTER UNLOADING.
LL BE	D.11.13 INVENTORY IDENTIFICATION
AASHTO JLATIONS	ALL POLES, DAVIT ARMS AND BASES SHALL BE PERMANENTLY MARKED WITH INVENTORY CODES SUPPLIED AT TIME OF ORDER. MARKINGS SHALL BE SUCH THAT THEY CAN NOT BE REMOVED BY HAND OR FADED OR OTHERWISE OBLITERATED BY RAIN, SNOW, WIND, SUN OR OTHER WEATHER CONDITIONS ENCOUNTERED IN OUTDOOR STORAGE
F "E"	WEATHER CONDITIONS ENCOUNTERED IN OUTDOOR STORAGE.
, THE	D.11.14 SAMPLE
TING	PROVIDE A COMPLETE FLOOD LIGHT POLE ASSEMBLY THAT INCLUDES THE POLE, HAND HOLE COVER, BASE PLATE, CLAM SHELL COVER, BRACKET, ETC FOR EVALUATION AND APPROVAL. FLOOD LIGHT POLE ASSEMBLY SAMPLE MAY BE USED ON THE PROJECT AFTER APPROVAL.
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SPECIFICATION GENERAL PROVISIONS

A. GENERAL

- 1. REQUIREMENTS SPECIFIED IN DIVISION 1, INSTRUCTIONS TO BIDDERS, SUPPLEMENTAL GENERAL CONDITIONS, SPECIAL CONDITIONS, ADDENDA, ALTERNATES, CONTRACT AND PROPOSAL, ALONG WITH THESE SPECIFICATIONS AND ALL ITS SECTIONS, COMPRISE THE CONTRACT DOCUMENTS FOR THE ELECTRICAL CONTRACT. DRAWINGS AND ALL THEIR REVISIONS UP TO THE BID SUBMITTAL DATE BECOME A BINDING PART OF THE CONTRACT, ALONG WITH THESE SPECIFICATIONS AS THOUGH THEY WERE ONE, AND ANYTHING IMPLIED BY THE SPECIFICATIONS SHALL BE INTERPRETED AS ALSO IMPLIED BY THE DRAWINGS AND VICE VERSA. PROVIDE NECESSARY ITEMS D. SHOP DRAWINGS SUBMITTALS FOR A COMPLETE INSTALLATION OF ALL ELECTRICALLY OPERATED EQUIPMENT LISTED IN THE SPECIFICATIONS OR SHOWN ON THE CONTRACT DRAWINGS AND/OR AS REQUIRED PER THE CITY OF CLEVELAND OR CLEVELAND PUBLIC POWER (CPP).
- 2. THE ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING, EQUIPMENT AND FOUNTAIN DRAWINGS AND SPECIFICATIONS ARE INCORPORATED INTO, AND BECOME A PART OF THIS SPECIFICATION. THIS CONTRACTOR SHALL EXAMINE ALL SUCH DRAWINGS AND SPECIFICATIONS AND BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS CONTAINED THEREIN. THE SUBMISSION OF HIS BID SHALL INDICATE SUCH KNOWLEDGE
- 3. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. THEY ARE INTENDED TO SHOW THE APPROXIMATE LOCATIONS OF EQUIPMENT AND CONDUIT. DIMENSIONS GIVEN ON THE PLANS, IN FIGURES, SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED IN THE FIELD. THE ELECTRICAL CONTRACTOR SHALL LAYOUT ALL EQUIPMENT TO MAKE SURE THE EQUIPMENT, AS PURCHASED, FITS IN THE SPACE SHOWN. EXACT LOCATION OF ALL EQUIPMENT SHALL BE VERIFIED IN THE FIELD AND ROUTING OF CONDUITS SHALL SUITE FIELD CONDITIONS.
- 4. UNTIL THE TIME OF INSTALLATION, THE OWNER RESERVES THE RIGHT TO MAKE MINOR CHANGES IN THE LOCATION OF CONDUIT AND EQUIPMENT WITHOUT ADDITIONAL COST TO THE CONTRACT
- 5. THE ELECTRICAL DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER. MATERIAL AND LABOR NECESSARY TO THE PROJECT SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. LABOR AND/OR MATERIALS NEITHER SHOWN NOR SPECIFIED, BUT OBVIOUSLY NECESSARY FOR THE COMPLETION AND PROPER FUNCTIONING OF THE SYSTEM, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
- 6. ARRANGE ALL EQUIPMENT SUBSTANTIALLY AS SHOWN ON THE DRAWINGS. MAKE DEVIATIONS ONLY WHERE NECESSARY TO AVOID INTERFERENCE. CHECK ALL EQUIPMENT SIZES AGAINST AVAILABLE SPACE PRIOR TO SHIPMENT TO AVOID INTERFERENCE.
- 7. EXAMINE THE WORK OF OTHER TRADES INSOFAR AS THEIR WORK COMES IN CONTACT WITH OR IS COVERED BY THIS WORK IN NO CASE ATTACH TO, OR FINISH AGAINST ANY DEFECTIVE WORK OR INSTALL WORK IN A MANNER WHICH WILL PREVENT PROPER INSTALLATION OF THE WORK OF OTHER TRADES.
- 8. CONTRACTOR SHALL VERIFY WITH OTHER TRADES ALL ELECTRICAL CHARACTERISTICS OF EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS, CONTRACTOR SHALL VERIFY VOLTAGE. PHASE AND HORSEPOWER AND SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO START OF WORK. CONTRACTOR SHALL PROVIDE DISCONNECTING MEANS AND OVERLOAD PROTECTION FOR ALL EQUIPMENT, UNLESS FURNISHED INTEGRAL WITH EQUIPMENT PACKAGE.
- 9. IT IS THE INTENT OF THESE DRAWINGS THAT THIS BE A COMPLETE ELECTRICAL JOB. ANY ERRORS OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BIDDING THE JOB.
- 10. TEST FOR GROUNDS, SHORT CIRCUITS AND PROPER FUNCTION OF ALL EQUIPMENT AFTER INSTALLATION IS COMPLETE. FAULTS IN THE INSTALLATION SHALL BE CORRECTED TO THE OWNER'S SATISFACTION.
- 11. DEMONSTRATE TO THE OWNER'S SATISFACTION THE PROPER OPERATION OF EACH OF THE SYSTEMS COMPRISING THIS CONTRACT BEFORE FINAL ACCEPTANCE.
- 12. AT ALL TIMES KEEP PREMISES IN NEAT AND ORDERLY CONDITION; FOLLOW EXPLICITLY ANY INSTRUCTION OF THE CITY OF CLEVELAND OR OWNER UPON COMPLETION OF WORK, THIS CONTRACTOR SHALL THOROUGHLY CLEAN ALL APPARATUS FURNISHED. THE BREVITY OF THIS SPECIFICATION SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF HIS RESPONSIBILITY TO PERFORM ALL WORK IN A FIRST-CLASS WORKMANLIKE MANNER, FULLY COMPLYING WITH ALL APPLICABLE CODES. THE SITE SHALL BE CLEANED ON A DAILY BASIS WITH ALL DEBRIS REMOVED DAILY.
- 13. "CONSTRUCTION COMPLETE" MEANS: PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, INSTALLATION, TESTING, PERMITS, FEES, AND ALL OTHER INCIDENTALS FOR THE WORK SHOWN ON THE PROJECT DOCUMENTS.
- B. VISIT TO THE SITE
 - 1. THIS CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING HIS WORK. THE SUBMISSION OF HIS PROPOSAL SHALL INDICATE SUCH KNOWLEDGE. NO ADDITIONAL PAYMENT SHALL BE MADE ON CLAIMS THAT ARISE FROM A LACK OF KNOWLEDGE OF THE EXISTING CONDITIONS.
- C. CODE AND PERMITS
 - 1. INSTALLATION SHALL BE IN FULL ACCORDANCE WITH ALL CODES, RULES AND REGULATIONS OF MUNICIPAL, CITY, COUNTY, STATE AND PUBLIC UTILITIES AND ALL OTHER AUTHORITIES HAVING JURISDICTION OVER THE PREMISES.

- 2. COMPLY WITH ANY SPECIFICATION REQUIREMENT EXCESS BUT NOT IN CONFLICT WITH CODE REQU
- 3. THE CONTRACTOR SHALL SECURE AND PAY FOR PLAN REVIEWS AND CERTIFICATES OF INSPECT CONNECTION WITH HIS WORK, REQUIRED BY TH AUTHORITIES. BEFORE FINAL PAYMENT OF THE ALLOWED, ALL CERTIFICATES SHALL BE DELIVER OWNER/ENGINEER IN DUPLICATE.
- 4. ELECTRICAL MATERIAL AND EQUIPMENT SHALL CUL LABEL EXCEPT WHERE UL DOES NOT LABEL MATERIAL AND EQUIPMENT.
- 1. THE CONTRACTOR SHALL SUBMIT ONE (1) ELEC SHOP DRAWINGS, THE SHOP DRAWINGS OF THE EQUIPMENT USING THE INDICATED NUMBERING TITLES, SHALL BE SUBMITTED THROUGH THE PF TO THE ENGINEER AND THEN RESUBMITTED FOR APPROVAL IF NECESSARY, SHOP DRAWINGS SH SUBMITTED FOR THE FOLLOWING ITEMS:
 - a. LIGHT FIXTURES
 - LIGHT POLES
 - GROUND BOXES d. PANELBOARD
 - e. DEVICES
- 2. ALL SUBMITTED SHOP DRAWINGS (MANUFACTU EQUIPMENT DESCRIPTIVE SHEETS OR VENDORS DRAWINGS) SHALL HAVE THE CONTRACTOR'S "S APPROVAL" INDICATING THAT THE ITEM SUBMIT FOR ON THE PLANS AND SPECIFICATIONS, IS API CONTRACTOR, THE DATE OF APPROVAL AND INI PERSON APPROVING THE SUBMITTAL AND THE COMPANY SUBMITTING SAID EQUIPMENT FOR A
- 3. ALL DESCRIPTIVE LITERATURE FOR O&M MANUA SUBMITTED IN A THREE (3) HOLE BROCHURE WI IDENTIFYING THE FOLLOWING: A. NAME OF THE OF THE JOB, ADDRESS, CITY AND STATE. C. NAM OF THE COMPANY SUBMITTING THE BROCHURES THE SUBMITTAL.
- 4. EVERY EFFORT SHALL BE MADE, IN CHECKING T DRAWINGS, TO DETECT AND CORRECT ALL ERR AND INACCURACIES. FAILURE TO DO THIS WILL I CONTRACTOR OF THE RESPONSIBILITY FOR THE COMPLETE INSTALLATION IN ACCORDANCE WITH DOCUMENTS.
- E. AS-BUILT DRAWINGS
- 1. SUBMIT TO THE OWNER/ENGINEER ONE SET OF ELECTRICAL DRAWINGS SHOWING THE AS-BUILT
- F. STANDARDS AND SUBSTITUTIONS
- 1. THE BASIS OF DESIGN IS BASED UPON THE FIRS MANUFACTURER LISTED OR CALLED OUT IN PAN FIXTURE SCHEDULES, ETC. WHERE OTHER MANU CHOSEN AND ALTER THE DESIGN OR SPACE REC THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSOCIATED WITH CHANGES REQUIRED FROM DESIGN. THIS INCLUDES ALL ITEMS OF COST FO DESIGN AND CONSTRUCTION INCLUDING COST TRADES INVOLVED.
- 2. WHEREVER THE WORDS "APPROVED BY", "APPR "AS DIRECTED" OR SIMILAR PHRASES ARE USED FOLLOWING SPECIFICATIONS. THEY SHALL BE UI REFER TO THE OWNER AS THE APPROVING AGE OR MAKE OF ANY EQUIPMENT OR MATERIALS NA SPECIFICATION (WHETHER OR NOT THE WORDS EQUAL" ARE USED) SHALL BE KNOWN AS THE "S"
- 3. THESE SPECIFICATIONS ESTABLISH QUALITY ST MATERIALS AND EQUIPMENT TO BE PROVIDED. ARE IDENTIFIED BY MANUFACTURER, TRADE NA DESIGNATION. THIS CONTRACTOR SHALL SUBMI PRICE BASED UPON STANDARD SPECIFIED EQUI DESCRIBED HEREIN AND AS DETAILED ON DRAW ASSOCIATED CONTRACT DOCUMENTS. THESE S ARE NOT TO BE CONSIDERED PROPRIETARY. TH MAY SUBMIT INFORMATION ON MATERIALS AND MANUFACTURERS (OTHER THAN THOSE LISTED) THE ARCHITECT AND ENGINEER NO LATER THAN BEFORE BIDS ARE SUBMITTED. IN ADDITION, SAM PROPOSED EQUIPMENT MAY BE REQUIRED TO E THE ENGINEER FOR REVIEW NO LATER THAN TE BEFORE BIDS ARE SUBMITTED. MANUFACTURER ACCEPTED BY THE ARCHITECT AND ENGINEER \ AN ADDENDUM TO THE SPECIFICATIONS AS AN A SUBSTITUTION EQUIPMENT ACCEPTED AS DETAI SHALL BE SHOWN AS A SEPARATE ADD OR DEDU FACTORED INTO THE BASE BID PRICE BY THE AR OWNER IF ACCEPTED.
- 4. SHOULD THE CONTRACTOR PROPOSE TO FURN AND EQUIPMENT OTHER THAN THOSE SPECIFIE BY ADDENDUM, SUBMIT A WRITTEN REQUEST FO SUBSTITUTIONS TO THE ARCHITECT AT THE BID REQUEST SHALL BE AN ALTERNATE TO THE ORIG ACCOMPANIED WITH COMPLETE DESCRIPTIVE (I BRAND NAME, CATALOG NUMBER, ETC.) AND TE FOR ALL ITEMS. FAILURE BY THIS CONTRACTOR **REQUISITE DOCUMENTATION DETAILED ABOVE** UNDERSTOOD BY THE ARCHITECT AND ENGINEE THAT SUBSTITUTE EQUIPMENT WILL NOT BE PRE CONTRACTOR FOR CONSIDERATION. SUCH SUBS NOT BE CONSIDERED AFTER THE BID OPENING I OF PROJECT WILL NOT BE PERMITTED FOR FURT INSPECTION AND EVALUATION AFTER THIS DATE
- 5. WHERE SUCH SUBSTITUTIONS ALTER THE DESIG REQUIREMENTS INDICATED ON THE DRAWINGS, ITEMS OF COST FOR THE REVISED DESIGN AND INCLUDING COST OF ALL ALLIED TRADES INVOLVE

Null PERMITS, ON INCOMENTING HIS COST INSPECTION SAME IS OF POIT THE SPECIFIED AND PROPOSED SUBSTITUTE HEADS. N NULL PERMITS, ON INCOMENTING IN ALL CASES WHENE SUBSTITUTIONS ARE FRAMITION INFO CONTRACT IS INCOMENTING INFORMATION SAME IS AN UNCLOSE OF FAULTUNES INFORMATION INFORMATION SAME IS AN UNCLOSE OF FAULTUNES INFORMATION INFORMATION IN SERVICE N INFORMATION INFORMATION SAME IS AN UNCLOSE OF FAULTUNES SUCIETYPES OF 6 INFORMATION IN SERVICE N INFORMATION INFORMATION IN SERVICE INFORMATION IN SERVICE INFORMATION INFORMATION IN SERVICE INFORMATION IN SERVICE INFORMATION INFORMATION IN SERVICE INFORMATION IN SERVICE INFORMATION INFORMATION IN SERVICE INFORMATION INFORMATION IN SERVICE INFORMATION INFORMATION	NTS THAT ARE IN UIREMENTS.		6.	ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO APPROVAL OF THE ARCHITECT AND ENGINEER. IF REQUESTED. THE CONTRACTOR SHALL SUBMIT (AT	
CONTRACT IS CONTRACT	R ALL PERMITS, ON IN			HIS COST) INSPECTION SAMPLES OF BOTH THE SPECIFIED AND PROPOSED SUBSTITUTE ITEMS.	
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PROVIDE WATER SEAL IN ALL OPENINGS CREATED THROUGH

WALLS, FLOORS OR CEILINGS.

- 5. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED ACCESS PANELS NECESSARY FOR HIS WORK, COORDINATE WITH ARCHITECT PRIOR TO INSTALLATION.
- MATERIALS AND WORKMANSHIP
- 1. ALL WORK SHALL BE INSTALLED IN A PRACTICAL AND WORKMANLIKE MANNER, BY MECHANICS SKILLED IN THE SEVERAL TRADES NECESSARY.
- 2. ALL MATERIALS SHALL BE NEW AND FREE FROM DEFECTS AND SHALL BE THE BEST OF THEIR SEVERAL KINDS UNLESS SPECIFIED OR INDICATED ON THE DRAWINGS TO THE CONTRARY.
- 3. DURING EACH PHASE AND AT THE COMPLETION OF THE CONSTRUCTION, THIS CONTRACTOR SHALL REMOVE ALL DEBRIS AND EXCESS MATERIALS CAUSED BY HIS WORK. HE SHALL LEAVE THE AREA OF OPERATION BROOM CLEAN.
- 4. ALL ELECTRICAL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OR ETL LABEL.
- 5. THIS CONTRACTOR SHALL GUARANTEE HIS WORKMANSHIP AND MATERIAL (LAMPS EXCEPTED) FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE AND LEAVE HIS WORK IN PERFECT ORDER AT THE COMPLETION. SHOULD DEFECTS DEVELOP WITHIN THE GUARANTEE PERIOD, THE CONTRACTOR SHALL, UPON NOTICE OF THE SAME, REMEDY THE DEFECTS AND HAVE ALL DAMAGES TO OTHER WORK OR FURNISHINGS CAUSED BY THE REPAIRS CORRECTED AT HIS EXPENSE TO THE CONDITION BEFORE SUCH DAMAGE.
- SCOPE OF WORK

1. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL STORAGE, UNPACKING AND PLACEMENT; TO INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING ITEMS:

- a. COMPLETE POWER DISTRIBUTION SYSTEM COMPLETE BRANCH CIRCUIT WIRING SYSTEM
- c. COMPLETE CONTROL RACEWAY AND WIRING FOR ALL PLUMBING SYSTEM , FOUNTAIN SYSTEM AND BELL R. WIRE AND CABLE SYSTEM
- COMPLETE LIGHTING SYSTEMS INCLUDING BASE, POLES, LUMINAIRES, GROUNDING, CONNECTIONS,
- REBAR, CONCRETE, CONDUIT, CABLING, ETC. e. TEMPORARY ELECTRICAL POWER AND LIGHTING AS REQUIRED FOR CONSTRUCTION.
- TESTING OF ALL CABLES AND CIRCUIT WIRING AFTER INSTALLATION.
- g. GROUNDING OF THE ELECTRICAL SYSTEM
- RACEWAYS
- 1. ALL WIRE SHALL BE RUN IN ACCORDANCE WITH CODE AND INSTALLED IN CONDUIT.
- 2. ALL EXPOSED CONDUIT SHALL BE CORROSION RESISTANT. PVC COATED, RIGID, GALVANIZED STEEL, THREADED, HEAVY WALL, METAL CONDUIT. EXCEPT AS INDICATED ON THE STREET POLE POWER SERVICE DETAIL ON DRAWING E-5.2
- 3. ALL UNDERGROUND CONDUIT SHALL BE HEAVY DUTY, PVC, SCHEDULE 80, HEAVY WALL, CONDUIT. SCHEDULE 80 SHALL BE USED FOR ALL TRANSITIONS, UNDER PAVED AREAS, UNDER FINISHED AREAS, AND ANY OTHER AREA SUBJECT TO TOP LOADING. PVC SCHEDULE 40 CONDUIT MAY BE USED FOR UNDERGROUND FEEDERS IN THE GRASS AREAS ONLY.
- 4. CONDUIT SIZE SHALL BE 1" MINIMUM.
- 5. CONDUIT SHALL BE SECURELY FASTENED IN PLACE.
- 6. ALL CONDUIT SHALL BE CONCEALED IN WALLS. EXPOSED CONDUIT IN FINISHED AREAS WILL NOT BE PERMITTED. EXPOSED CONDUIT WILL BE PERMITTED IN UNFINISHED AREAS SUCH AS THE FOUNTAIN VAULT, EQUIPMENT RACK OR WITH THE SPECIFIC APPROVAL OF THE ARCHITECT/OWNER.
- 7. USE WATERTIGHT JOINTS WITH BURIED AND CONCRETE ENCASED CONDUIT. ALL BURIED CONDUITS OUTSIDE OF BUILDINGS SHALL HAVE A MINIMUM OF 24" OR COVER. METAL CONDUITS BURIED IN EARTH SHALL BE PAINTED (TWO COATS) WITH HEAVY ASPHALTUM PAINT.
- 8. SUPPORT RUNS OF CONDUIT AS DETAILED IN THE APPROPRIATE TABLE OF THE NATIONAL ELECTRICAL CODE (NEC).
- 9. INSTALL EMPTY CONDUIT FOR FUTURE USE AS INDICATED ON THE DRAWINGS. CONDUIT SHALL BE COMPLETE WITH JETLINE OR PULL ROPE, JUNCTION/OUTLET BOXES, TILE RINGS AND APPROPRIATE COVER PLATES.
- 10. PROVIDE PITCHPOCKETS WHERE CONDUITS PENETRATE THE ROOF
- 11. THREAD LUBRICATION/SEALANT IS REQUIRED ON OUTDOOR AND UNDERGROUND THREADED METAL JOINTS.
- 12. INSTALL WATER PROOF SEAL FITTINGS WHERE CONDUITS PENETRATE CONCRETE FLOOR SLABS OR MASONRY WALLS REQUIRED TO BE WATER PROOF SEALED.
- 13. HORIZONTAL PORTION OF CONDUIT EXPOSED FEEDING EQUIPMENT SHALL NOT BE MORE THAN 5'-0" UNLESS THE WRITTEN APPROVAL FROM ARCHITECT OR ENGINEER IS OBTAINED.
- 14. RACEWAYS AND COUPLERS OF DIFFERENT SYSTEMS SHALL BE IDENTIFIED BY COLOR. RACEWAYS UP TO 2" SHALL HAVE FACTOR APPLIED FINISH.
- PULL AND JUNCTION BOXES
- 1. INSTALL PULL AND JUNCTION BOXES WHERE SHOWN ON THE DRAWINGS, AND WHERE REQUIRED FOR CHANGES IN DIRECTION, AT JUNCTION POINTS, AND TO FACILITATE WIRE PULLING. FURNISH BOX SIZES IN ACCORDANCE WITH NEC UNLESS LARGER BOXES ARE INDICATED.

- 2. PROVIDE STEEL BOXES AND REMOVABLE COVERS OF CODE GAGE, HOT ROLLED SHEET STEEL, HOT DIPPED GALVANIZED INSIDE AND OUTSIDE, FOR ABOVE GROUND WORK. FURNISH WEATHERPROOF BOXES WHEN INSTALLED ABOVE GROUND OUTSIDE.
- 3. PROVIDE CAST IRON BOXES, HOT DIPPED GALVANIZED INSIDE AND OUTSIDE WHERE SHOWN ON THE DRAWINGS. FURNISH REMOVABLE COVERS WITH GASKETS AND STAINLESS STEEL, BRASS OR BRONZE SCREWS.
- 4. PROVIDE PERMANENT NAMEPLATES FOR ALL PULL AND JUNCTION BOXES IDENTIFYING CIRCUITS, VOLTAGE, AND SOURCE.
- PROVIDE NEMA 4X STAINLESS STEEL RATED FOR OUTDOORS ON IN EQUIPMENT VAULTS.

Q. OUTLET BOXES

- GANG BOXES SHALL BE ONE PIECE (MINIMUM), 2-1/8" DEEP.
- 2. FLUSH MOUNT BOXES IN ALL FINISHED WALLS, COORDINATE WITH WALL CONSTRUCTION. ALL RAISED COVERS AS REQUIRED IN WALLS WITH OTHER FINISHES SO THAT THE COVER PLATES FIT TIGHTLY AGAINST BOXES , 3/16" MAXIMUM GAPS ARE ALLOWED FOR WALLS.
- ADJUST LOCATION OF OUTLETS IN MASONRY OR TILE CONSTRUCTION TO OCCUR IN THE NEAREST JOINT TO THE HEIGHT SPECIFIED. HEIGHTS SHALL MEET A.D.A. REQUIREMENTS.
- 4. SUPPORT ALL BOXES TO MAINTAIN PROPER ALIGNMENT AND RIGIDITY.
- 5. CLEAN BOXES OF ALL FOREIGN MATTER PRIOR TO THE INSTALLATION OR WIRING OR DEVICES.
- 6. MOUNTING HEIGHTS ON THE DRAWINGS ARE TO THE CENTERLINE OF THE BOX UNLESS OTHERWISE NOTED.
- 1. COLOR CODE CONDUCTORS (EXCEPT CONTROL AND INSTRUMENTATION CONDUCTORS) AS FOLLOWS: 240/120 VOLT SYSTEM PHASE A BLACK, PHASE B RED, NEUTRAL WHITE, GROUND GREEN GREEN.
- 2. #12 AND #10 CONDUCTORS SHALL HAVE CONTINUOUS INSULATION COLOR, AS LISTED ABOVE.
- 3. COLOR CODE CONDUCTORS LARGER THAN ABOVE, WHICH DO NOT HAVE CONTINUOUS INSULATION COLOR BY APPLICATION OF AT LEAST TWO LAPS OF COLORED TAPE ON EACH CONDUCTOR AT ALL POINTS OF ACCESS INCLUDING JUNCTION BOXES. COLOR TAPE SHALL BE THE EQUAL OF 3M PRODUCTS SCOTCH #35.
- CONDUCTORS SHALL BE SOFT ANNEALED COPPER INSULATED FOR 600 VOLTS UNLESS SPECIFICALLY INDICATED OTHERWISE ALUMINUM CONDUCTORS ARE NOT ALLOWED ON THIS PROJECT
- 5. INSULATION TYPE SHALL BE TYPE THW FOR WIRE SIZES #8 AWG AND LARGER AND THHN OR THWN FOR #10AWG AND SMALLER THHN SHALL NOT BE USED IN WET OR DAMP LOCATIONS.
- 6. FLEXIBLE CORD SHALL BE HEAVY DUTY TYPE SO WITH AN EQUIPMENT GROUND CONDUCTOR IN ADDITION TO THE CURRENT CARRYING CONDUCTORS.
- 7. PROVIDE #12 CONDUCTORS, UNLESS OTHERWISE INDICATED. A. CONTROL CONDUCTORS SHALL BE #14 MINIMUM FOR NEC CLASS I AND #16 FOR NEC CLASS II.
- 8. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED.
- 9. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID.
- 10. INSTALL WIRING IN CONDUIT.
- 11. CONNECT #10 AND SMALLER WIRES WITH CONSTANT PRESSURE EXPANDABLE SPRING TYPE CONNECTORS, "SCOTCHLOK" BY 3M OR B-CAP BY BUCHANAN.
- 12. CONNECT #8 AND LARGER WIRES WITH COMPRESSION CONNECTORS OR SPLICES AS MANUFACTURED BY BURNDY OR T&B
- 13. INSULATE SPLICING CONNECTORS TO AT LEAST 200% OF THE WIRE INSULATION. USE PRE-STRETCHED TUBING CONNECTOR INSULATORS, 3M PST FOR #2 AND LARGER CONDUCTORS.
- 14. PULL CONDUCTORS USING RECOGNIZED METHODS AND EQUIPMENT LEAVING AT LEAST 6" WIRE AT ALL JUNCTION BOXES FOR CONNECTIONS. A. CLEANOUT EACH CONDUIT SYSTEM **BEFORE PULLING WIRE.**
- 15. FORM AND TIE ALL WIRING IN PANELBOARDS.
- 16. THERE SHALL BE NO WIRENUT JOINTS OR SPLICES MADE INSIDE PANELBOARDS.
- 17. BRANCH CIRCUIT WIRE SIZES (AND CONDUITS) SHALL BE INCREASED FROM THOSE INDICATED ON THE PLANS TO PREVENT EXCESSIVE VOLTAGE DROP. BRANCH CIRCUITS SHALL BE INSTALLED WITH WIRES OF SUFFICIENT SIZE SO THAT VOLTAGE DROP BETWEEN THE PANEL AND THE LOADS DOES NOT EXCEED LIMIT OF 3%.
- 18. WIRE SIZES SHALL BE BASED ON THE 75 DEGREES C. AMPACITIES FOR WIRE SIZES NO. 14-1 A.W.G., AND #1/0 A.W.G. AND LARGER.
- 19. CIRCUITS MAY BE MULTI-PLEXED IN CONDUIT PROVIDED WIRE IS PROPERLY DERATED AND CONDUIT SIZED PER CODE. UNDER NO CIRCUMSTANCES SHALL MORE THAN (9) CURRENT CARRYING CONDUCTORS BE RUN IN A SINGLE CONDUIT.
- 20. NEUTRAL WIRES MAY NOT BE SHARED ON ANY CIRCUITS.

S. WIRE DEVICES

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- 1. ALL RECEPTACLES, SWITCHES AND OTHER WIRING DEVICES SHALL BE LABELED WITH CIRCUIT NUMBER AND PANEL NAME ON COVER. USE ENGRAVED BLACK LETTERS ON PLASTIC COVERS OR CLEAR TAPE WITH BLACK LETTERS ON OTHERS FACEPLATE TYPES.
- 2. WIRING DEVICE COLOR SHALL BE IVORY, OR AS DIRECTED BY ARCHITECT.
- 3. PROVIDE TOTALLY ENCLOSED, 20 AMPERE, 120/277 VOLT, QUIET A/C GENERAL USE SNAP SWITCHES.
- 4. SWITCHES SHALL BE SPECIFICATION GRADE AS MANUFACTURED BY HUBBELL, P&S, OR LEVITON.
- 5. PROVIDE NEMA CONFIGURATION 5-20R DUPLEX 125 VOLT GROUNDING TYPE RECEPTACLES RATED FOR 20 AMPERES UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- 6. RECEPTACLES SHALL BE INDUSTRIAL GRADE AS MANUFACTURED BY HUBBELL, P&S OR LEVITON.
- 7. RECEPTACLES REQUIRING AMPERAGES, VOLTAGES OR CONFIGURATIONS DIFFERENT FROM THE DUPLEX CONVENIENCE RECEPTACLES ABOVE SHALL BE AS INDICATED ON THE DRAWINGS.
- 8. PROVIDE OTHER RECEPTACLES OF A QUALITY, MATERIAL AND WORKMANSHIP EQUAL TO THAT SPECIFIED FOR DUPLEX CONVENIENCE RECEPTACLES.
- 9. PROVIDE COVER OR DEVICE PLATES FOR OUTLET BOXES AS FOLLOWS UNLESS OTHERWISE NOTED:
 - a: EXTERIOR AREAS: COPPER FREE ALUMINUM WITH GRAY, POWDER EPOXY FINISH, GASKET, WEATHERPROOF, CROUSE-HINDS "WLRD" FOR DUPLEX RECEPTACLES AND WLRS FOR SINGLE RECEPTACLES OR EQUAL.
 - b: TELEPHONE, COMMUNICATION, AND SIGNAL OUTLET PLATES, SHALL MATCH THOSE USED FOR RECEPTACLES AND SWITCHES. ALL OUTLET AND/OR JUNCTION BOXES SHALL BE COMPLETE WITH A COVER PLATE BY THIS CONTRACTOR.
 - c: WHERE DEVICES ARE GANGED, THEY SHALL BE INSTALLED UNDER A COMMON COVERPLATE.
- 11. LOCATE THE SWITCHES 44" ABOVE THE FINISHED FLOOR ELEVATION TO CENTER OR NEAREST BLOCK COURSE (WITHIN A.D.A. REQUIREMENTS), UNLESS OTHERWISE INDICATED. THE LONG DIMENSION OF THE SWITCHES SHALL BE VERTICAL.
- 12. LOCATE RECEPTACLES 18" ABOVE THE FINISHED FLOOR ELEVATION TO CENTER OR NEAREST BLOCK COURSE (WITHIN A.D.A. REQUIREMENTS), UNLESS NOTED OTHERWISE. THE LONG DIMENSION OF RECEPTACLES SHALL BE VERTICAL AND GROUND POLE UP.
- T. SAFETY SWITCHES
 - 1. SAFETY SWITCHES SHALL BE THE ENCLOSED HEAVY-DUTY TYPE (TYPE HD) WITH QUICK-MAKE, QUICK-BREAK MECHANISM AND EXTERNAL PAD LOCKABLE OPERATING HANDLE.
- 2. SAFETY SWITCHES SHALL BE RATED FOR 240 VOLTS AS APPLICABLE. THEY SHALL BE HORSEPOWER RATED WHEN USED IN MOTOR CIRCUITS.
- 3. SAFETY SWITCHES SHALL BE FUSIBLE OR NON-FUSIBLE 2, 3, OR 4 POLE AS INDICATED ON THE DRAWINGS.
- 4. SAFETY SWITCHES SHALL BE SINGLE THROW UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- 5. SAFETY SWITCHES SHALL INCLUDE DPDT AUXILIARY CONTACT SWITCH FOR PRE-ACTION INTERCONNECTION WHEN REQUIRED BY EQUIPMENT MANUFACTURER.
- 6. ENCLOSURES SHALL BE NEMA 4X SS OUTDOORS UNLESS OTHERWISE INDICATED ON DRAWINGS.
- 7. MANUFACTURER SHALL BE SQUARE D, EATON, CUTLER HAMMER OR APPROVED EQUAL. ALL SAFETY SWITCHES SHALL BE BY ONE MANUFACTURER.
- 8. MOUNT THE SAFETY SWITCHES SECURELY BETWEEN 3' X 6' LEVELS ABOVE THE FLOOR UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- 9. PROVIDE PERMANENT LABELING PER SPECIFICATIONS. PROVIDE PERMANENT LABELING ON FUSIBLE DISCONNECTS REFLECTING REDUCED FUSE AND WIRE SIZE ACCORDINGLY.
- U. PANELBOARDS
 - 1. PANELBOARDS SHALL BE ENCLOSED DEAD FRONT SAFETY TYPE WITH FEATURES AND RATINGS AS SCHEDULED ON THE DRAWINGS.
- 2. PANELS KNOWN AS "LOAD CENTERS" ARE UNACCEPTABLE.
- 3. MOLDED CASE CIRCUIT BREAKERS SHALL BE AS SCHEDULED ON THE DRAWINGS AND SPECIFIED IN THIS DIVISION.
- 4. ALL BUS BARS SHALL BE RECTANGULAR SOLID COPPER.
- 5. SPACE, WHERE SHOWN IN PANEL SCHEDULES, DESIGNATES SPACE FOR FUTURE PROTECTIVE DEVICES AND SHALL INCLUDE BUS AND SUPPORT.
- 6. INSTALL CABINETS SO THAT CENTER OF THE TOP BREAKER DOES NOT EXCEED 6'-6" ABOVE THE GRADE.
- 7. ENTRIES ON DIRECTORY CARDS SHALL BE TYPED, COMPLETE AND ACCURATE.
- 8. ALL BOLTED CONNECTIONS SHALL BE TORQUED IN ACCORDANCE WITH MANUFACTURER'S STANDARDS.
- 9. ELECTRICAL CONTRACTOR SHALL ARRANGE CIRCUITS AS NEAR AS POSSIBLE TO CIRCUIT NUMBERS ON THE DRAWINGS. AT COMPLETION OF JOB, ELECTRICAL CONTRACTOR SHALL TAKE

CURRENT READING CHECKS OF RESPECTIVE PHASES OF CIRCUIT CONNECTIONS SHALL BE REARRANGED T AS CLOSELY AS POSSIBLE, THE LOAD IN THE PANEL.

- 10. ALL BREAKERS SHALL BE BOLT-ON TYPE.
- 11. MANUFACTURER SHALL BE SQUARE D, EATON, CUTLE GE OR APPROVED EQUAL.
- 12. PROVIDE NEW PANELBOARD IN NEMA 3R ENCLOSURE
- 13. POWDER COAT PANELBOARD ENCLOSURE WITH HUNT PAINT OR COLOR AS DESIGNATED BY ARCHITECT.

V. GROUNDING

- 1. GROUND ALL EQUIPMENT PER N.E.C.
- 2. ALL CONDUITS SHALL CONTAIN A CODE-SIZED GROUN SIZE PER N.E.C. IN ADDITION TO THE CONDUCTORS SH THE PLANS. WHERE CIRCUIT CONDUCTORS ARE INCR SIZE FOR VOLTAGE DROP, THE GROUND WIRE SIZE SH INCREASED PROPORTIONATELY.
- 3. WHERE AN ISOLATED, INSULATED GROUND IS REQUIR SEPARATE GREEN GROUND SHALL BE RUN FROM THE GROUND BUS TO THE ISOLATED GROUND CONNECTIC DEVICE SERVED. IN NO CASE SHALL THE SYSTEM GRO AND ASSOCIATED OUTLET BOXES, CONDUIT AND BUIL STEEL) BE ALLOWED TO CONTACT THE ISOLATED GRO (GREEN WIRE AND DEVICE GROUND).

W. LED LUMINAIRES

- 1. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROV LUMINARIES, OF TYPES AND SIZES INDICATED ON FIXT SCHEDULES.
- 2. MATERIAL AND SPECIFICATIONS FOR EACH LUMINAIRE FOLLOWS:
 - a. EACH LUMINAIRE SHALL CONSIST OF AN A THAT UTILIZES LEDS AS THE LIGHT SOURC ADDITION, A COMPLETE LUMINAIRE SHALL OF A HOUSING, LED ARRAY, AND ELECTRO (POWER SUPPLY).
 - b. EACH LUMINAIRE SHALL BE RATED FOR A OPERATIONAL LIFE OF 50,000 HOURS AT A **OPERATING TIME OF 12.0 HOURS PER DAY** RATING MUST BE CONDUCTED 40C AMBIEN TEMPERATURE.
 - c. THE RATED OPERATING TEMPERATURE RA BE -30°C TO +40°C.
 - d. EACH LUMINAIRE IS CAPABLE OF OPERATI 100°F [37°C], BUT NOT EXPECTED TO COMF PHOTOMETRIC REQUIREMENTS AT ELEVAT TEMPERATURES.
 - e. PHOTOMETRY MUST BE COMPLIANT WITH LM-79 AND SHALL BE CONDUCTED AT 25°C TEMPERATURE.
 - f. THE INDIVIDUAL LEDS SHALL BE CONSTRU THAT A CATASTROPHIC LOSS OR THE FAIL ONE LED WILL NOT RESULT IN THE LOSS C ENTIRE LUMINAIRE.
 - g. LUMINARE SHALL BE CONSTRUCTED SUCH MODULES MAY BE REPLACED OR REPAIRE REPLACEMENT OF WHOLE LUMINAIRE.
 - h. EACH LUMINAIRE SHALL BE LISTED WITH UNDERWRITERS LABORATORY, INC. UNDE FOR LUMINAIRES, OR AN EQUIVALENT STA FROM A NATIONALLY RECOGNIZED TESTIN LABORATORY.
 - i. LUMINAIRE SHALL HAVE A SEVEN (7) YEAR MANUFACTURER'S WARRANTY.
- 3. ELECTRICAL REQUIREMENTS
 - a. POWER CONSUMPTION: MAXIMUM POWER CONSUMPTION ALLOWED FOR THE LUMINAIRE SHALL BE DETERMINED BY APPLICATION. THE LUMINAIRE SHALL NOT CONSUME POWER IN THE OFF STATE.
 - b. OPERATION VOLTAGE: THE LUMINAIRE SHALL OPERATE FROM A 60 HZ ±3 HZ AC LINE OVER A VOLTAGE RANGING FROM 108 VAC TO 305 VAC. THE FLUCTUATIONS OF LINE VOLTAGE SHALL HAVE NO VISIBLE EFFECT ON THE LUMINOUS OUTPUT.
 - c. POWER FACTOR: THE LUMINAIRE SHALL HAVE A POWER FACTOR OF 0.90 OR GREATER. d. THD: TOTAL HARMONIC DISTORTION (CURRENT AND
 - VOLTAGE) INDUCED INTO AN AC POWER LINE BY A LUMINAIRE SHALL NOT EXCEED 20 PERCENT. e. SURGE SUPPRESSION: THE LUMINAIRE ON-BOARD CIRCUITRY SHALL INCLUDE FUSED SURGE PROTECTION DEVICES (SPD) TO WITHSTAND HIGH REPETITION NOISE TRANSIENTS AS A RESULT OF UTILITY LINE SWITCHING, NEARBY LIGHTNING STRIKES, AND OTHER INTERFERENCE. THE SPD SHALL PROTECT THE LUMINAIRE FROM DAMAGE AND FAILURE FOR COMMON MODE TRANSIENT PEAK VOLTAGES UP TO 10 KV (MINIMUM) AND TRANSIENT PEAK CURRENTS UP TO 5 KA (MINIMUM). SPD SHALL CONFORM TO UL 1449 DEPENDING OF THE COMPONENTS USED IN THE DESIGN. SPD PERFORMANCE SHALL BE TESTED PER THE PROCEDURES IN ANSI/IEEE C62.41-1992 (OR CURRENT EDITION) FOR CATEGORY C (STANDARD). THE SPD
 - SHALL FAIL IN SUCH A WAY AS THE LUMINAIRE WILL NO LONGER OPERATE. THE SPD SHALL BE FIELD REPLACEABLE. f. EACH LUMINAIRE SHALL HAVE INTEGRAL UL LISTED
 - CLASS II POWER SUPPLIES. CLASS I POWER SUPPLIES WILL NOT BE ACCEPTABLE. g. OPERATIONAL PERFORMANCE: THE LED CIRCUITRY
 - SHALL PREVENT VISIBLE FLICKER TO THE UNAIDED EYE OVER THE VOLTAGE RANGE SPECIFIED ABOVE.
 - h. RF INTERFERENCE: LED DRIVERS MUST MEET CLASS A EMISSION LIMITS REFERRED IN FEDERAL COMMUNICATIONS COMMISSION (FCC) TITLE 47,

S. A MINIMUM O BALANCE,		i.	SUBPART B, SECTION 15 REGULATIONS CONCERNING THE EMISSION OF ELECTRONIC NOISE. DRIVERS SHALL HAVE A CLASS A SOUND RATING.
	4.	PHOTOME	TRIC REQUIREMENTS
ER HAMMER, E. TER GREEN		a.	OPTICAL ASSEMBLIES: LEDS SHALL BE PROVIDED WITH DISCREET OVER OPTICAL ELEMENTS TO PROVIDE PROPER DISTRIBUTIONS. ALL LEDS SHALL PROVIDE THE SAME OPTICAL PATTERN SUCH THAT CATASTROPHIC FAILURES OF INDIVIDUAL LEDS WILL
		b.	NOT CONSTITUTE A LOSS IN THE DISTRIBUTION PATTERN. ILLUMINANCE: THE ILLUMINANCE SHALL NOT DECREASE BY MORE THAN 30% OVER THE EXPECTED
ND WIRE			OPERATING LIFE. THE MEASUREMENTS SHALL BE CALIBRATED TO STANDARD PHOTOPIC CALIBRATIONS.
HOWN ON REASED IN HALL BE		C.	LIGHT COLOR/QUALITY: THE LUMINAIRE SHALL HAVE A CORRELATED COLOR TEMPERATURE (CCT) RANGE OF 4,000K TO 4,500K. THE COLOR RENDITION INDEX (CRI) SHALL BE 80 OR GREATER. BINNING OF LEDS SHALL CONFORM TO ANSI/ G. NEMA SSL 3-2010.
RED A E PANEL ON OF THE	5.	THERMAL I	MANAGEMENT
ound (wire Lding Ound		a.	THE THERMAL MANAGEMENT (OF THE HEAT GENERATED BY THE LEDS) SHALL BE OF SUFFICIENT CAPACITY TO ASSURE PROPER OPERATION OF THE LUMINAIRE OVER THE EXPECTED USEFUL LIFE.
		b.	THE LED MANUFACTURER'S MAXIMUM THERMAL PAD TEMPERATURE FOR THE EXPECTED LIFE SHALL NOT BE EXCEEDED.
IDE LED TURE		С.	THERMAL MANAGEMENT SHALL BE PASSIVE BY DESIGN. THE USE OF FANS OR OTHER MECHANICAL DEVICES SHALL NOT BE ALLOWED.
E ARE AS		d.	THE LUMINAIRE SHALL HAVE A MINIMUM HEAT SINK SURFACE SUCH THAT LED MANUFACTURER'S MAXIMUM JUNCTION TEMPERATURE IS NOT
CE. IN CONSIST		e.	EXCEEDED AT MAXIMUM RATED AMBIENT TEMPERATURE. THE HEAT SINK MATERIAL SHALL BE ALUMINUM.
	6.	PHYSICAL	AND MECHANICAL REQUIREMENTS
	•		
		a.	DEVICE, NOT REQUIRING ON-SITE ASSEMBLY FOR INSTALLATION. THE POWER SUPPLY FOR THE
ING ABOVE		b.	THE ASSEMBLY AND MANUFACTURING PROCESS FOR THE LED LUMINAIRE SHALL BE DESIGNED TO ASSURE
PLY WITH .TED			SUPPORTED TO WITHSTAND MECHANICAL SHOCK AND VIBRATION FROM HIGH WINDS AND OTHER
IESNA CAMBIENT		C.	THE ELECTRONICS/POWER SUPPLY ENCLOSURE SHALL MEET THE REQUIREMENTS FOR NEMA/UL WET
JCTED SUCH LURE OF DF THE		d.	DOOR SHALL BE HINGED AND SECURED TO THE HOUSING IN A MANNER TO PREVENT ITS ACCIDENTAL OPENING
H THAT LED ED WITHOUT		e.	THE CIRCUIT BOARD AND POWER SUPPLY SHALL BE CONTAINED INSIDE THE LUMINAIRE. ELECTROLYTIC CAPACITORS USED IN THE POWER SUPPLIES SHALL BE RATED FOR -40°F TO 220°F (-40°C TO +105°C), LONG
ER UL1598 ANDARD NG			LIFE (> 5000 HOURS), AND OPERATED AT NO MORE THAN 70% OF THEIR RATED VOLTAGE, AND 70% OF RATED CURRENT.

FEEDER FROM NEW CPP UTILITY SERVICE ENTRANCE DROP AT POLE TO NEW METERED SERVICE PANELBOARD 'CGCP-PNL, USE 3#4/0, 1#4EG, 3"C. SEE DRAWING E-1.2 FOR CONTINUATION.SEE PARTIAL ONE-LINE DIAGRAM ON DRAWING E-5.1.

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- 3. DO NO EXTEND CONDUIT ABOVE THE SECONDARY OR NEUTRAL POSITION AT ANY TIME.
- 4. CONDUIT SHALL MAINTAIN A MINIMUM CLEARANCE OF 6" BELOW THE SECONDARY OR NEUTRAL.
- 5. CUSTOMER SHALL PROVIDE ADDITIONAL CONTINUOUS CABLE OF SUFFICIENT LENGTH (5 FT MINIMUM) TO CONNECT WITH OVERHEAD SOURCE.
- 6. COMPANY SHALL DETERMINE THE LOCATION / POSITION OF VERTICAL RISERS ON THE POLE BASED ON TRAFFIC FLOW AND LOCATION OF CATV, OR TELEPHONE CO. ATTACHMENTS.

STREET POLE POWER SERVICE DETAIL

NOT TO SCALE

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						MF TYP BU	R BY SP PE BY SP IS COPPI	EC EC ER		PANEL	. NO)E	(N) (40	CGCP-PN	L 120	LOCAT MOUN DWG.	ion Ting No.	EQUIPMENT RACK SURFACE E-1.2	
	٨				CONDUCTOR	DESCR	IPTION	BRE	AKER	AMF	S		AN	IPS	BREA	KER	DESCRIPTION	CONDUCTOR
-	$\neg \land \land \neg$		N EX. UTILITY POLE	NOTES:	31/LE	STACE DECEDITACIE		POLE	AIVIPS	A 5.0	В	1 2	A 65.0	в	POLE	100	ALT 1 FOUNTAIN CONTROL DANIEL	51ZE
			#1, THIS DRAWING.		2#10, 1#10EG	STAGE RECEPTACLE		1	20	5.0	50	2 1	03.0	65.0	2	100	ALT - I FOUNTAIN CONTROL PANEL	L 3#1, 1#0EG
				1. 36" MIN. RADIUS BENDS REQUIRED.	2#10, 1#10EG	STAGE RECEPTACLE		1	20	50	5.0	5 6	14.0	03.0	2	20	FLOOD LIGHTS - GROUP 1	2#10_1#10EG
			LUG WITH TAB FOR	2 INSTALL STUB-UP AT EXACT LOCATION	2#10, #10EG	STAGE RECEPTACIE		1	20	0.0	50	7 8	14.0	14.0	2	20	ECOD EIGHTS - GROOP T	2#10, 1#10EG
		/ / PULL ROPE.	DO NOT GLUE	DESIGNATED BY THE UTILITY COMPANY.	2#10, 1#10EG	STAGE RECEPTACLE		1	20	50	0.0	9 10	12.0	14.0	2	20	FLOOD LIGHTS - GROUP 2	2#10 1#10EG
)R 2).		2#10, 1#10EG	STAGE RECEPTACIE		1	20	0.0	50 1	1 12	12.0	12.0	-	20		2
		/ /		*INDICATES ITEM IS INCIDENTAL TO	2#10, 1#10EG	STAGE RECEPTACLE		1	20	5.0		3 14	5.0	12.0	1	20	LIGHT POLE - RECEPTACLES - G1	2#10, 1#10EG
				THE RISER POLE STUB-UP PAY ITEM.	2#10, 1#10EG	STAGE RECEPTACLE		1	20		5.0	5 16		5.0	1	20	LIGHT POLE - RECEPTACLES - G2	2#10, 1#10EG
					2#10, 1#10EG	STAGE RECEPTACLE		1	20	5.0		7 18	5.0		1	20	RECEPTACLE AT PANELBOARD	2#10, 1#10EG
E 3" CONDUIT			RIGID META	ALLIC CONDUIT IS	2#10, 1#10EG	STAGE RECEPTACLE		1	20	1.11	5.0 1	9 20		12.0	2	30	ALT2 BELL CONTROLLER PANEL	3#10, 1#10EG
PLUG AT END.		o [‡]	PROHIBITEI	D.	2#10, 1#10EG	STAGE RECEPTACLE		1	20	5.0	12	1 22	12.0					
					2#10, 1#10EG	STAGE RECEPTACLE		1	20		5.0 2	3 24		5.0	1	20	ALT2 BELL CNTL. AUX. 120VAC	2#12, 1#12EG
	L 🖌		1			SPARE		1	20		12	5 26			1	20	SPARE	
		/ \ /	EINI			SPARE		1	20		12	7 28			1	20	SPARE	
	\neg					SPARE		1			12	9 30			1	20	SPARE	
	\triangleleft					SPARE		2	15			1 32			1	20	SPARE	
$\langle \mathbf{X} \mathbf{X} \mathbf{X} \rangle$	\triangleleft \ '	$\{ \land \land$	$\langle \times \land \times $			BLANK						3 34			1	-	BLANK	
		RED ELECTRICAL WAR	RNING TAPE			BLANK		1	20			5 36			1		BLANK	
		14" BELOW GRADE ABO	OVE ALL	Ω.		BLANK		1			1	37 38	1.1		1		BLANK	
						BLANK		1				9 40			1		BLANK	
	\	$\langle \langle \rangle \rangle$	\sim	Z		BLANK		1			4	1 42	1.1		1		BLANK	
			*SCHEDULE 80 PVC.	36" (2		AMPS	PER PHASE			30.00	30.00		113.00	113.00			AMPS PER PHASE	
			-[-];)		AMPS:	BUS A BUS B	143 143	3.00 3.00	MAIN B CONDU	REAKEI IT SIZE R SIZE		200A 3" 8#4/0, 1#	1EG	Total	kVA: YM.	A B 17.160 17.160 22000 (MINIMUM)	
INSTALL (2) 90°-36" RADIUS I	PVC									SOURC	E		UTILIT	Y	kVA DE	MAND	34.320	

STREET POLE POWER SERVICE DETAIL NOT TO SCALE

ELECTRICAL LUMINAIRE SCHEDULE - SITE LIGHTING								
TYPE	DESCRIPTION	VOLTAGE	LAMPS	FIXTURE WATTS	MANUFACTURER	CATALOG	REMARKS	
SE-1	TWO (2) FLOOD LIGHTS WITH ADJUSTABLE TWIN ARM DISTRIBUTION PROVIDED ON 27' POLE.	MVOLT	LED	(2) 297 W	GENERAL ELECTRIC <u>ALTERNATES:</u> STREETWORKS (EATON) OR APPROVED EQUAL	EVOLVE SERIES EFH1-01-0-EE-77-7-40-A-DKBZ-F-R	39000 NOMINAL LUMENS; LED DRIVER; TWIN MOUNTED ON 27'-0" FIBERGLASS POLE. PROVIDE WITH INTEGRAL PHOTOCELL WITH OCCUPANCY AND DIMMING CONTROL. REFER TO DETAIL 1 ON DRAWING E-5.1. SEE DRAWING E-0.2 FOR ADDITIONAL REQUIREMENTS.	
SE-2	TWO (2) FLOOD LIGHTS WITH ADJUSTABLE TWIN ARM DISTRIBUTION PROVIDED ON 27' POLE.	MVOLT	LED	(2) 125 W	GENERAL ELECTRIC <u>ALTERNATES:</u> STREETWORKS (EATON) OR APPROVED EQUAL	EVOLVE SERIES EFN-B-0-F3-7-40-AX-DKBZ-F-R	15000 NOMINAL LUMENS; LED DRIVER; TWIN MOUNTED ON 27'-0" FIBERGLASS POLE. PROVIDE WITH INTEGRAL PHOTOCELL WITH OCCUPANCY AND DIMMING CONTROL. REFER TO DETAIL 1 ON DRAWING E-5.1. SEE DRAWING E-0.2 FOR ADDITIONAL REQUIREMENTS.	
SE-3	THREE (3) FLOOD LIGHTS WITH ADJUSTABLE TRIPLE ARM DISTRIBUTION PROVIDED ON 27' POLE.	MVOLT	LED	(2) 297 W + (1) 98 W	GENERAL ELECTRIC <u>ALTERNATES:</u> STREETWORKS (EATON) OR APPROVED EQUAL	EVOLVE SERIES EFH1-01-0-EE-77-7-40-AX-DKBZ-F-R AND EVOLVE SERIES EFN-B-0-ES-7-40-AX-DKBZ-F-R	39000 NOMINAL LUMENS; LED DRIVER; MOUNTED ON THE OUTSIDE OF TRIPLE MOUNT BRACKET ON 27'-0" FIBERGLASS POLE. PROVIDE WITH INTEGRAL PHOTOCELL WITH OCCUPANCY AND DIMMING CONTROL. 13000 NOMINAL LUMENS; LED DRIVER; MOUNTED ON CENTER OF TRIPLE MOUNT BRACKET ON 27'-0" FIBERGLASS POLE. PROVIDE WITH INTEGRAL PHOTOCELL WITH OCCUPANCY AND DIMMING CONTROL. FIELD AIM AT FOUNTAIN. REFER TO DETAIL 1 ON DRAWING E-5.1. SEE DRAWING E-0.2 FOR ADDITIONAL REQUIREMENTS AND	

LUMINAIRE SCHEDULE NOTES:

- 1. LIGHT FIXTURES SHALL CONFORM TO CPP SPECIFICATIONS AND REQUIREMENTS.
- 2. LIGHT FIXTURE COLOR TEMPERATURE SHALL BE 4000K MINIMUM.
- 3. NOMINAL LUMEN VALUES MAY VARY BETWEEN DIFFERENT MANUFACTURERS OF SAME TYPE OF LUMINAIRE. NOMINAL LUMEN VALUES GIVEN IN REMARKS SECTION ARE THE VALUES USED FOR DESIGN.
- 4. LUMINAIRES AND POLES SHALL BE PROVIDED WITH 7 YEAR WARRANTY.
- 5. PROVIDE LUMINAIRES WITH AN INTEGRAL 8-PIN PHOTO-ELECTRIC CELL WITH OCCUPANCY SENSOR AND DIMMING CAPABILITY. WHEN THERE IS NO OCCUPANCY, FIXTURE SHALL DIM TO 70% OUTPUT.
- 6. IF ALTERNATE LUMINAIRES OR SUBSTITUTIONS ARE TO BE PROVIDED, CONTRACTOR SHALL PROVIDE A PHOTOMETRIC POINT-BY-POINT LAYOUT EQUIVALENT TO THE BASIS OF DESIGN LIGHTING CALCULATION AS PART OF THE SHOP DRAWING SUBMITTAL. IES POINT-BY-POINT CALCULATION SHALL CONFORM TO THE IES RECOMMENDATIONS FOR LIGHT LOSS FACTOR, POINT SPACING, ETC.

LIGHTING FIXTURE SCHEDULE 4

PANELBOARD 'CGCP-PNL' SCHEDULE

CLEVELAND PUBLIC POWER GENERAL CONSTRUCTION NOTES: (Drawing # 9385)

Contact Ohio Utilities Protection Service, two working days prior to start of construction. In Ohio, call toll free 1-800-362-2764. It's the Law.

All power conduit runs are to be constructed by using 2", 4", or 5" PVC schedule EB conduits, as depicted on the plans, encased with a 3" concrete envelope, unless otherwise noted on the plans or specifications. The concrete envelope is to be 4000 psi (City of Cleveland Concrete Mix). When conduits are not encased in concrete in the utility easement area, all conduit runs are to be constructed using 2", 4" or 5" Schedule DB.

All primary conduit runs are to be installed at a minimum of 30" below existing and/or proposed grades and secondary conduit runs are to be installed at a minimum of 24" below existing and/or proposed grades.

All Vertical and horizontal curves shall have a minimum radius of no less than 30 feet. These curves are to be constructed by using 2' 6" chord lengths and appropriate 5 degree couplings, or as noted on plan view. See "conduit curve construction chart". The Engineering Department of Cleveland Public Power must approve any other curve design, field changes, or the use of preformed radius bends.

A rugged polyethylene material warning tape capable of resisting high or low ph conditions must be placed above the electrical conduit bank. This warning tape is to be six inches wide, red in color, and imprinted with the words, "DANGER – BURIED HIGH VOLTAGE CABLES BELOW". This tape is to be placed 6" above the newly installed duct bank. This shall conform with the standards as set by Ohio Utilities Protection Service.

As an option, contractor may elect to encase CPP's conduits in red concrete. Both methods are approved by Cleveland Public Power and are recommended by Ohio Utilities Protection Service.

All manhole outside walls and conduits runs are to have a minimum clearance of 5' (face to face), horizontally from all water lines. Vertical clearance shall be at a minimum of 1' 6", or as shown on profile sheets of the project. Clearance between other utilities shall be 1 foot, unless noted otherwise. CPP's duct bank shall cross over or under other utilities at an angle of no less than 45 degrees.

Page 5

Aggregate size

No. 57 for course aggregate shall be limestone, gravel or crushed aircooled blast furnace slag. Both course and fine aggregate are as per ASTM C 33-94.

If crushed air-cooled blast furnace slag is used it shall meet all of the requirements of ODOT 703.01 and ODOT 703.02. Copies of all tests and certifications for the crushed air-cooled blast furnace slag, if used, shall be submitted as part of the concrete mix design.

When high early strength is required, ASTM C-150-94 Type 111 A cement or admixtures in accordance with ASTM C-494-94 shall be used.

PAVEMENT REPAIR

Concrete Pavement

All pavement openings shall be sawed full depth and have smooth vertical faces.

Dowels shall be required as per dowel table.

Concrete repaying shall be performed in such a manner that the entire lane and/or slab in which the repair area is located shall be restored. Should any portion of the repair area extend into an adjacent lane and/or slab, that lane or slab shall also be repayed.

Asphalt Pavement

All asphalt openings shall be sawed full depth and have smooth vertical faces. Dowels shall be required as per the dowel table.

Asphalt resurfacing shall be performed in such a manner that the entire lane in which the repairs are located shall be restored. Should any portion of the repair area extend into an adjacent lane, that lane shall also be resurfaced. For pavements with a width of 40' or less, a lane is considered ½ the pavement width.

Extend over cut in longitudinal direction two feet (2') unto undisturbed sub grade.

Each newly constructed manhole shall be f debris. The contractor shall also provide a conduits.

Page 2

The contractor shall provide Cleveland Pub newly installed conduit system, showing bo locations. These locations shall be at 50' into based on Cuyahoga County Regional Geode

BACKFILL MATERIAL AND BACKFILL

Sand may only be used as indicated on the conduit cover. The sand material shall be n silt, clay, loam, friable or soluble materials shall be installed in 4 inch (4") lifts and con only. Compact to within 12" of sub grade an maximum dry density as determined by Sta The use of water for compaction is prohibite

Employ a placement method that does not encasement.

Do not backfill over wet, frozen or unstable

FLOWABLE FILL SPECIFICATION FOR

PART 1 CERTIFICATION OF COMPLIAN Material must come from a plant with a cur demonstrating the ability of mix design to n Certificates in excess of one year will not be contain the name of supplier, date, contract each delivery ticket.

PART 11 MATERIALS

- All materials shall conform to the applicabl 1. Cement shall be ASTM C-150 Type 3
- 2. The use of Fly Ash is strictly prohibit

Page 6

Brick Pavement All streets within the City of Cleveland tha be replaced with brick, or as directed by the Division of Engineering and Construction o

The contractor under this section of the spe base, pavement, sidewalk, driveway aprons handicap ramps, and integral radius curb a restoration of all adjacent surfaces, which a at no cost to the City of Cleveland and/or C shall take any and all measures to ensure v with graffiti, footprints, tire tracks, and roc

REGULATIONS GOVERNING THE LAYI SIDEWALKS, APRONS AND CURBING

Concrete walks shall be of one-course const (4") in thickness, except in the downtown d inches (6") in thickness. Concrete for walks Class "C" concrete as per item 608 and Spe Specifications for the City of Cleveland -13

When concrete walks are laid on clay, an exand-one-half inches $(1 \frac{1}{2})$ must be made an act as a foundation to the four inches of side

No blocks of concrete shall be larger than so cut by the use of an approved "Grooving To inches (1/4") deep. All edges shall be rounde to a radius of one-fourth inch (I/4").

Existing aprons and drive areas of the walk Aprons and the area of walk over which veh six inches (6") in thickness, and must be laid Supplemental to State Specifications for the

At all water meter covers, gas boxes, hydra fitted openings shall be cut in the sidewalk. these obstructions have been raised or lowe

		Pa
free of all foreign objects and pulling line in each of the new	Page 3 3. Fine aggregate shall conform to ODOT Specification 703.03. Fine aggregate for Mortar or Grout. (ODOT Construction and Materials Specifications most current edition). The use of spent foundry sand or core is strictly prohibited.	4. Cover all joints in clay pipe is material before pouring flow any pipe or manhole in the t flowable fill. Repair technique
blic Power with as-built plans of oth vertical and horizontal atervals. All elevations are to be	PART 111 PERFORMANCE ENHANCING ADMIXTURE	5. Contact the respective utilit
etic Surveys.	an effect of lowering the water/cement ratio to 95 and 105 lbs/cubic foot. The air entrained content for the mix shall be 30% to eliminate/minimize the	CONCRETE DESIGN MIX (CITY
ING PROCEDURES	excessive water and segregation. Compressive strengths shall have a range of 50 PSI to 80 PSI at 28 days will be required if additional excavation by machine or hand is required.	Under this section of these specific a separate mix design for each com
plan details for items such as natural river or bank sand; free of and organic matter. The backfill	Approved Admixtures	designed in accordance with ASTM
mpacted using mechanical means nd each layer of backfill to 95% andard Proctor Test (ASTM D698). ed, example flooding or puddling. disturb or damage conduit	Manufacturer Product a) Master Builders Rheofill b) Axim Fow Air c) W.R. Grace Darafill d) Or approved equal For Air	REQUIREMENT Minimum twenty-eight (28) 4000 psi for 28 days compress taken and tested per ASTM C-39-9 remaining three will be tested at tw on the average results of the three
e sub grade surfaces.	PART IV FLOWABLE FILL MIX DESIGN The mix design shall be proportional as follows:	Minimum Cement Constant 650 lbs. Per cubic yard. The
UTILITY TRENCHES	Cement (Type 1)50 lbs/cubic yardSand (SSD)2475 lbs/cubic yardWater25 gallons/cubic yardAdmixture (air)3 oz/cubic yard	or C-595-94. Water Cement Ratio 0.45 Maximum
rrent Certificate of Compliance meet the specified requirements. e accepted. Certificates must t number and mix design data on	 Variations of the aforementioned mix design are strictly prohibited PART V APPLICATION Flowable fill shall begin 12" above the top of pipe and continue in the trench to the concrete base. Material for pipe bedding and pipe zone to a minimum depth of 12 	Slump Three inches (3") Nominal, a use of chemical admixtures meeting maximum of 7", may be used with p Engineering and Construction Insp admixture and resultant slump sha
le requirements stated herein. l ted	 inches over the top of the pipe shall be specified by the utility. 3. Exposed bolts and valves exposed in the trench should be wrapped with polyethylene material conforming to ODOT 748.07 (8 mil thick). 	Air Content Four percent (4%) to seven an ASTM C-173-94 or C-231-94.
	Page 7	
at are currently brick paved, shall a inspector representing the of the City of Cleveland.	No obstruction shall be placed in front of any catch basin, fire hydrant, fire alarm box or letter box, or near enough to the same to interfere with their use.	1 AN 2 RE
ecifications shall construct concrete s, curb and gutter sections, and walk. This includes the are disturbed by this construction Eleveland Public Power. Contractor vandals do not deface concrete cks etc.	No change in the width of the walk to be laid shall be made from that of existing walks on the street at the time work is done under this permit, unless specially permitted by the Director of Public Service. Trees, lawns, and shrubbery shall not be interfered with or destroyed by any work performed by the contractor. Walks must be laid to the same grade as existing walks on the street, unless permission for change of grade is obtained from the Director of Public Service.	
ING OF CONCRETE	Only one half (1/2) of sidewalk in the business district can be obstructed at one time, unless contractor has an obstruction permit. Gutters must be left open at all times.	
truction and shall be four inches listrict where they must be six s, curbs, drives, and aprons shall be cial of the "Supplemental to State 967".	The spacing between the walk and the curb line must be graded to allow water drainage, and must be of a gradual slope from walk to the curb line. The contractor is responsible for removing all dirt and rubbish caused by his work.	
xtra excavation to a depth of one- nd filled with sand and gravel, to lewalk proper.	FAILURE OF A CONTRACTOR TO COMPLY WITH THESE REGULATIONS SHALL RESULT IN THE WITHHOLDING OF FUTURE PERMITS AND SHALL SUBJECT THE HOLDER OF THIS PERMIT TO THE PENALTIES PRESCRIBED IN THE SIDEWALK ORDINANCE.	
ix feet (6') and the joints must be ol" making a groove one-fourth ed with an approved "Edging Tool"	CURBING: Curbing shall conform to the standards established for size and quality in the district in which it is to be installed. Cast-in-place concrete curbs and Integral curbs, where used, shall conform to detail Plan No. ME-246 of City of Cleveland.	
k must be constructed of concrete. hicles drive must be no less than id in accordance with e City of Cleveland.	Copies of these specifications and plans for Pavement Repair and Laying of Concrete Sidewalks may be obtained, upon request, from the Division of Engineering and Construction of The City of Cleveland.	
nts, or other obstructions, neatly . No walk shall be laid until all ered to the correct elevations.		
CPP DETAILS ARE PROVIDED ON PL	E PROVIDED FOR REFERENCE. INFORMATION ANS SHALL TAKE PRECEDENCE OVER CPP DET/	AILS
UNLESS OTHERW REQUIREMENTS,	VISE NOTED. VERIFY EXACT DIMENSIONS, ETC. WITH FIELD CONDITIONS AND WITH CPP.	

