



Grayson County

Planning & Community Development

129 Davis Street
P.O. Box 217
Independence, Virginia 24348

Phone (276) 773-2471
(276) 236-8149
Fax: (276) 773-3673

To: All Plan Holders
RE: Grayson County Recreation Park Trailhead Bathroom
Date: June 21st, 2016
Bid Opening Date: June 28th, 2016

This addendum forms a part of the Project Manual and modifies plans and specifications previously issued. The bidder shall acknowledge receipt of this addendum in written format or sign the sheet on the date of the Bid opening that they received the addendum.

Changes: 1) The Bathroom Plans issued as part of this addendum add pages; A401(Interior Elevations) and A601 (Door and Finish Schedules, Details and Notes).

The Original Set of Plans, in the Project Manual did not contain these pages. These two pages should be referenced as part of the prepared bid and are included in the scope of the project.

2) On page A101 the General Work Notes reference a "reflected ceiling plan" on page 121. This is a misprint. There is not a "reflected ceiling plan". Details regarding the ceiling are included on page A301, with information on the truss plan.

For your convenience we included a new set of plans with these changes reflected. The set is referenced as "Full Set" and is available by contacting the Building Department at 276-773-2322 or by referencing the Graysoncountyva.gov website under Informational items, look for Addendum #1-Trailhead Bathroom.

The rest of the Project Manual did not change. The plan addition of pages A401 and A601 and the misprint was the reason for the addendum. We encourage bidders to place the original plans with this set, the updated set has a vicinity map.

Relationship to Bid Opening Date: At this time we are notifying all bidders of Addendum #1. Should all bidders receive the addendum and are given the opportunity to reflect these changes, prior to the bid opening date, we will open the bids as planned on June 28th. Should bidders attend the bid opening, whom did not receive the Addendum #1, we will extend the bid opening date, for seven (7) days. Please feel free to call us if you have any questions. 276-773-2322

END OF ADDENDUM #1

GRAYSON COUNTY RESTROOM BUILDING

GRAYSON COUNTY RECREATION PARK

INDEPENDENCE, VIRGINIA



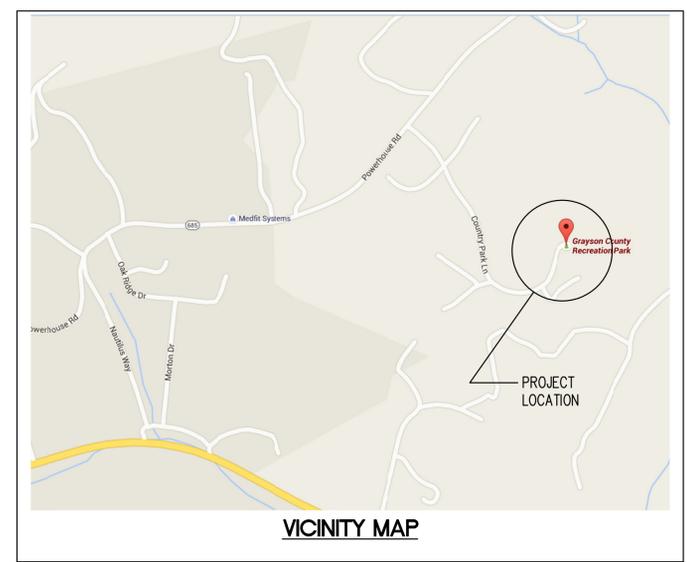
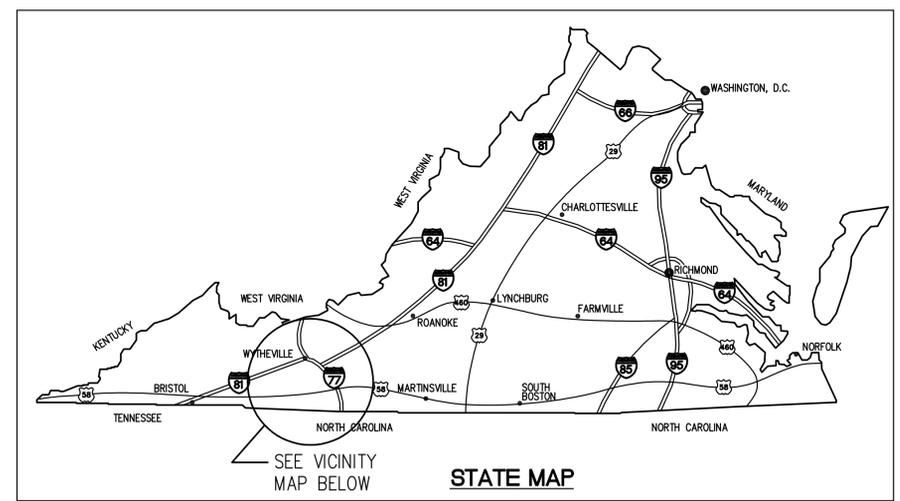
INDEX OF DRAWINGS	
T100	TITLE SHEET
A101	FLOOR PLAN, ROOF PLAN, DETAILS AND NOTES
A201	EXTERIOR ELEVATIONS
A301	FLOOR PLAN, ROOF FRAMING PLAN, AND NOTES
A401	INTERIOR ELEVATIONS AND DETAILS
A601	DOOR AND FINISH SCHEDULES, DETAILS, AND NOTES
S001	STRUCTURAL NOTES
S002	STRUCTURAL NOTES AND TRUSS LOADING DIAGRAM
S101	FOUNDATION PLAN, ROOF FRAMING PLAN, DETAILS, AND NOTES
S501	TYPICAL DETAILS
P101	PLUMBING SPECIFICATIONS
P201	PLUMBING LEGEND, FLOOR PLAN, AND SCHEDULES
M101	MECHANICAL SPECIFICATIONS
M201	MECHANICAL LEGEND, FLOOR PLAN, AND SCHEDULES
E001	ELECTRICAL LEGEND AND ABBREVIATIONS
E002	ELECTRICAL SPECIFICATIONS
E101	POWER AND LIGHTING PLAN
E201	ELECTRICAL DETAILS
E301	ELECTRICAL SCHEDULES

ABBREVIATIONS			
AFF	ABOVE FINISHED FLOOR	EWC	ELECTRIC WATER COOLER
AHU	AIR HANDLING UNIT	EXIST	EXISTING
ALUM	ALUMINUM	FD	FLOOR DRAIN
APPROX	APPROXIMATE	FEC	FIRE EXTINGUISHER CABINET
ASSOC	ASSOCIATED	FIN	FINISH, FINISHED
BTWN	BETWEEN	FV	FIELD VERIFY
CLO	CLOSET	GEN	GENERAL
CLR	CLEAR	GWB	GYPSON WALL BOARD
CMU	CONCRETE MASONRY UNIT	HDW	HARDWARE
CONC	CONCRETE	HM	HOLLOW METAL
CONT	CONTINUOUS	INSUL	INSULATION
CT	CERAMIC TILE	IT	INFORMATION TECHNOLOGY
DIA	DIAMETER	JAN	JANITOR
DIM	DIMENSION	LAV	LAVATORY
DR	DOOR	MAS	MASONRY
DWG	DRAWING	MAX	MAXIMUM
EA	EACH	MB	MARKER BOARD
EQ	EQUAL	MECH	MECHANICAL
		MFR	MANUFACTURER
MIN	MINIMUM		
MTL	MATERIAL, METAL		
NIC	NOT IN CONTRACT		
OC	ON CENTER		
OFF	OFF		
OPP	OPPOSITE		
PLAM	PLASTIC LAMINATE		
PT OR PTD	PAINT, PAINTED		
PT	PRESSURE TREATED		
SATC	SUSPENDED ACOUSTICAL TILE CEILING		
SIM	SIMILAR		
STOR	STORAGE		
TB	TACKBOARD		
TOIL	TOILET ROOM		
TYP	TYPICAL		
UNO	UNLESS NOTED OTHERWISE		
VCT	VINYL COMPOSITION TILE		
WC	WATER CLOSET		
WD	WOOD		

REFERENCE LEGEND			
	SECTION OR DETAIL NUMBER OR LETTER		ENLARGED DETAIL MARK
	SHEET WHERE SHOWN		DOOR MARK,
	ELEVATION MARK		WINDOW MARK
			NEW WORK KEYNOTE
			DEMOLITION KEYNOTE
			ROOM NAME & NUMBER MARK
			PARTITION TYPE MARK
			CENTERLINE
			UNIVERSAL ADA ACCESSIBILITY MARK

CODE INFORMATION							
<p>APPLICABLE CODES: VIRGINIA UNIFORM STATEWIDE BUILDING CODE (USBC) 2012 EDITION, PART I, VIRGINIA CONSTRUCTION CODE ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES - ICC/ANSI A117.1-2009 (BY INCLUSION IN USBC) 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN PUBLISHED SEPTEMBER 15, 2010</p>							
<p>(SECTION 304) RESTROOM BUILDING - USE GROUP B, BUSINESS</p>							
<p>TYPE OF CONSTRUCTION: VB</p>							
<p>BUILDING AREA: 854 SF</p>							
<p>DESIGN OCCUPANCY:</p> <table border="0"> <tr> <td>FIXTURES</td> <td>8</td> </tr> <tr> <td>UNDER ROOF</td> <td>59</td> </tr> <tr> <td>TOTAL</td> <td>67</td> </tr> </table>		FIXTURES	8	UNDER ROOF	59	TOTAL	67
FIXTURES	8						
UNDER ROOF	59						
TOTAL	67						
<p>PATH OF EGRESS TRAVEL SHALL NOT EXCEED A DISTANCE OF 200 FEET. (TABLE 1016.1)</p>							

- | GENERAL NOTES | |
|---------------|--|
| 1. | THE INTENT OF THE CONTRACT DOCUMENTS IS TO INCLUDE ALL WORK AND ITEMS REQUIRED FOR THE COMPLETION OF THAT WORK. ALL WORK LISTED, SHOWN, OR IMPLIED ON THE CONSTRUCTION DOCUMENTS SHALL BE PROVIDED BY THE CONTRACTOR; AS IT IS REASONABLE TO INFER THE WORK AS NECESSARY TO PROVIDE THE INTENDED RESULT. THE USE OF THE WORD "PROVIDED" IN CONNECTION WITH ANY ITEM SHOWN SHALL MEAN "FURNISHED, INSTALLED, AND CONNECTED," UNLESS NOTED OTHERWISE. |
| 2. | CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF CONSTRUCTION DOCUMENTS AND SHOP DRAWINGS. CONTRACTOR SHALL NOTIFY ARCHITECT IN WRITING IMMEDIATELY OF ANY DISCREPANCIES IN PLANS, SHOP DRAWINGS AND/OR SPECIFICATIONS. SHOULD A DISCREPANCY BE FOUND, DO NOT PROCEED UNTIL CLARIFICATIONS HAVE BEEN MADE BY THE ARCHITECT/ENGINEER. |
| 3. | CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND FIELD CONDITIONS; DO NOT SCALE DRAWINGS. IF INSUFFICIENT INFORMATION EXISTS, NOTIFY THE ARCHITECT IMMEDIATELY FOR CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK. |
| 4. | ALL WORK SHALL CONFORM TO THE STATE FIRE PREVENTION AND BUILDING CODES, AND ANY LOCAL GOVERNING CODES AND ORDINANCES. |
| 5. | ALL PATCH AND REPAIR WORK SHALL BE DONE TO THE EXTENT THAT THE PATCH/REPAIR IS NOT DETECTABLE. |
| 6. | UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM FACE OF MASONRY OR FACE OF STUD. DOOR FRAMES SHALL BE LOCATED 4" FROM ADJACENT WALL/CORNER OR CENTERED IN WALL UNLESS OTHERWISE NOTED. ALL WINDOW, DOOR, AND CABINET SIZES SHOWN ARE NOMINAL. REFER TO MANUFACTURER'S INFORMATION FOR ROUGH OPENING SIZES AND ACTUAL GLAZING DIMENSIONS FOR DOORS AND WINDOWS. CEILING HEIGHT DIMENSIONS ARE FROM FINISHED FLOOR TO FINISH FACE OF CEILING. |
| 7. | ITEMS MARKED "NIC" ARE "NOT IN CONTRACT." SUCH ITEMS ARE INCLUDED IN THE DOCUMENTS AND REQUIRE CONTRACTOR COORDINATION FOR CONSTRUCTION. ITEMS MARKED "OFCI" ARE "OWNER FURNISHED CONTRACTOR INSTALLED." |
| 8. | DETAILS MARKED "TYPICAL OR TYP" SHALL APPLY IN ALL CASES UNLESS OTHERWISE NOTED. |
| 9. | DETAILS MARKED "SIMILAR OR SIM" SHALL HAVE COMPARABLE CONDITIONS TO THAT SHOWN. |
| 10. | GYPSON BOARD SHALL BE 5/8" THICK UNLESS OTHERWISE NOTED. USE WATER RESISTANT GYPSON WALLBOARD ON ALL VERTICAL FACES EXPOSED TO WATER OR MOISTURE. USE FIBERGLASS FACED EXTERIOR GYPSON SHEATHING ON ALL EXTERIOR LOCATIONS. |
| 11. | SEE ELECTRICAL DRAWINGS FOR FIXTURE TYPES AND LOCATION OF WALL MOUNTED FIXTURES. |
| 12. | PROVIDE BLOCKING IN WALLS AND CEILINGS FOR ATTACHMENT OF CEILING AND WALL MOUNTED EQUIPMENT (E.G., ELECTRIC WATER COOLERS, FIRE EXTINGUISHERS, COUNTERTOP BRACKETS, AND LIGHT FIXTURES). |
| 13. | EXTEND WALLS TIGHT TO UNDERSIDE OF FLOOR/CEILING ABOVE UNLESS OTHERWISE INDICATED. |
| 14. | ALL ITEMS SHOWN ON DRAWINGS SHALL BE CONSIDERED PART OF THE CONTRACT UNLESS NOTED OTHERWISE. |
| 15. | THE GRAYSON COUNTY RECREATION PARK BATHROOM IS FUNDED IN PART BY THE VIRGINIA DEPARTMENT OF CONSERVATION & RECREATION RECREATIONAL TRAILS PROGRAM GRANT. THE FEDERAL HIGHWAY ADMINISTRATION AND MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY (MAP-21) IS THE SOURCE OF THE GRANT FUNDING. AS A FEDERALLY FUNDED PROJECT, THE PARK BATHROOM CONSTRUCTION MUST FOLLOW FEDERAL GUIDELINES INCLUDING THE PROVISIONS IN FHWA-1273 AND TITLE 23 CFR "BUY AMERICA" CLAUSE. ANY MATERIAL(S) AND/OR ANY PRODUCT(S) USED, WITH ANY PORTION OF SUCH MATERIAL OR ITEM THAT HAS IRON AND/OR STEEL, INCLUDING ITEMS SUCH AS REBAR FOR CONCRETE, FASTENERS, PLUMBING FIXTURES, ETC. MUST BE PRE-CERTIFIED AS A "BUY AMERICA" DOMESTIC PRODUCT PRIOR TO INSTALLATION AS PART OF THIS STRUCTURE. ANY DEVIATIONS FROM PLAN SPECIFICATIONS AND/OR MATERIALS, WHEN REQUIRED TO MEET THE BUY AMERICA CLAUSE IS ALLOWED WHEN PREAPPROVED BY THE OWNER'S PROJECT MANAGER AND CAN BE SUBSTITUTED WITH OWNER'S PRIOR WRITTEN APPROVAL. |

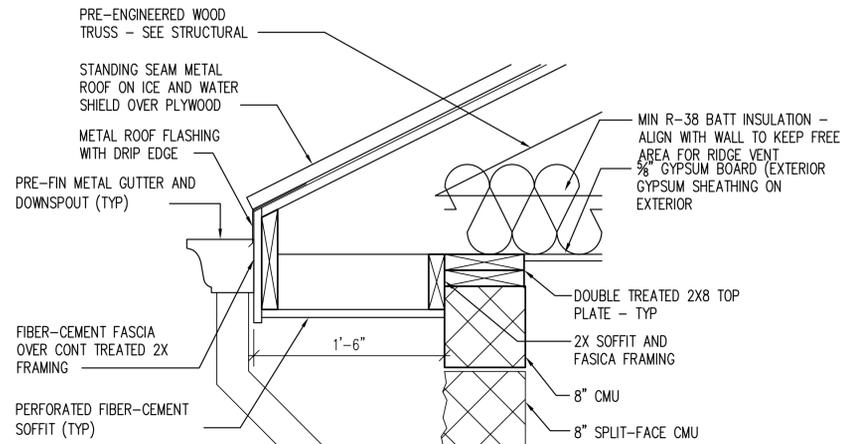


PROJECT
 GRAYSON COUNTY RESTROOM BUILDING

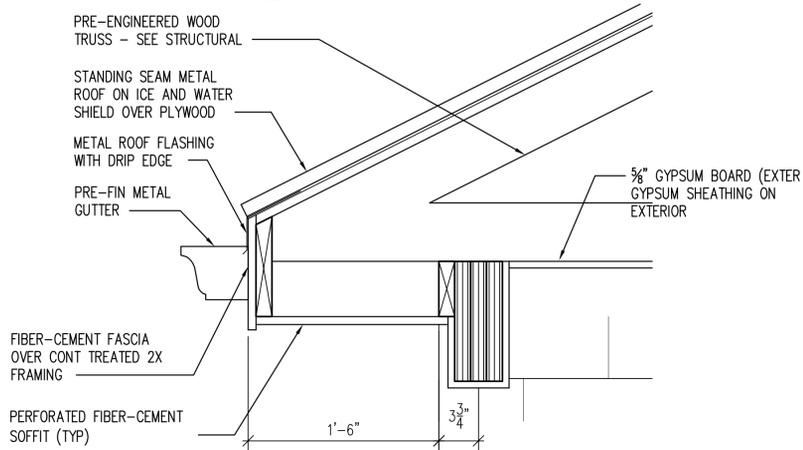
GRAYSON COUNTY RECREATION PARK
 INDEPENDENCE, VA

TITLE SHEET

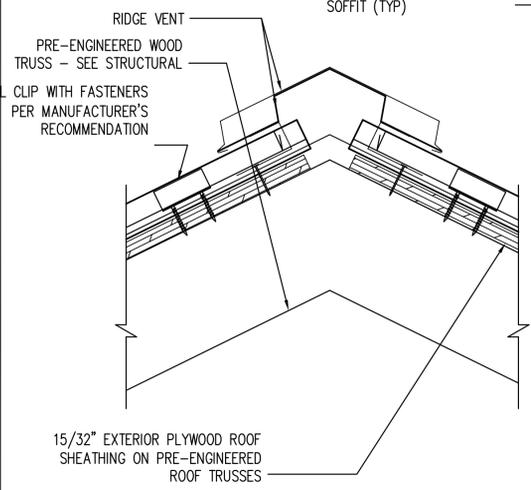
T100
 Date OCTOBER 9, 2015



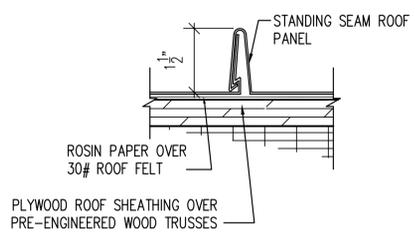
DETAIL A
 A101 | A101 SCALE: 3" = 1'-0" 0 3 6 12IN.



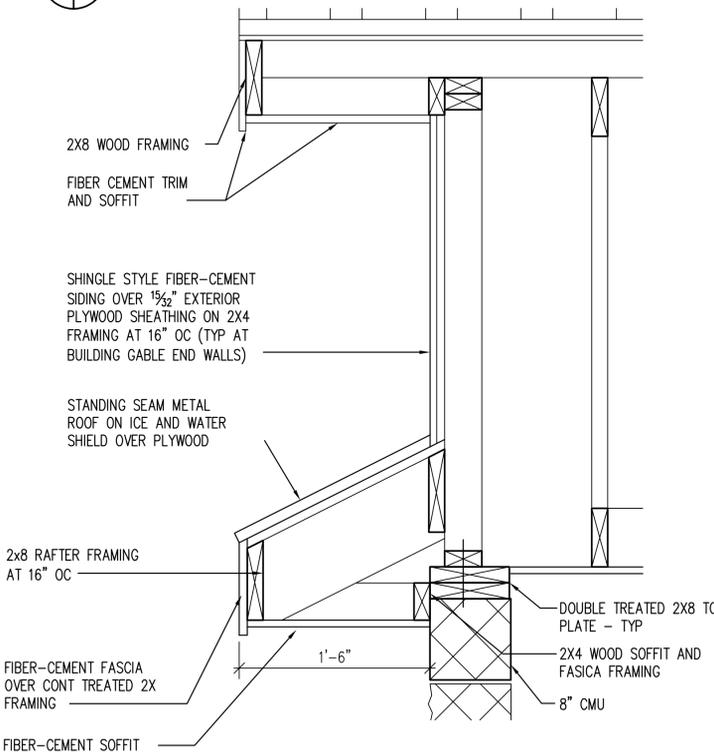
DETAIL B
 A101 | A101 SCALE: 3" = 1'-0" 0 3 6 12IN.



DETAIL C
 A101 | A101 SCALE: 3" = 1'-0"



TYP METAL ROOF SEAM DETAIL
 SCALE: 6" = 1'-0"



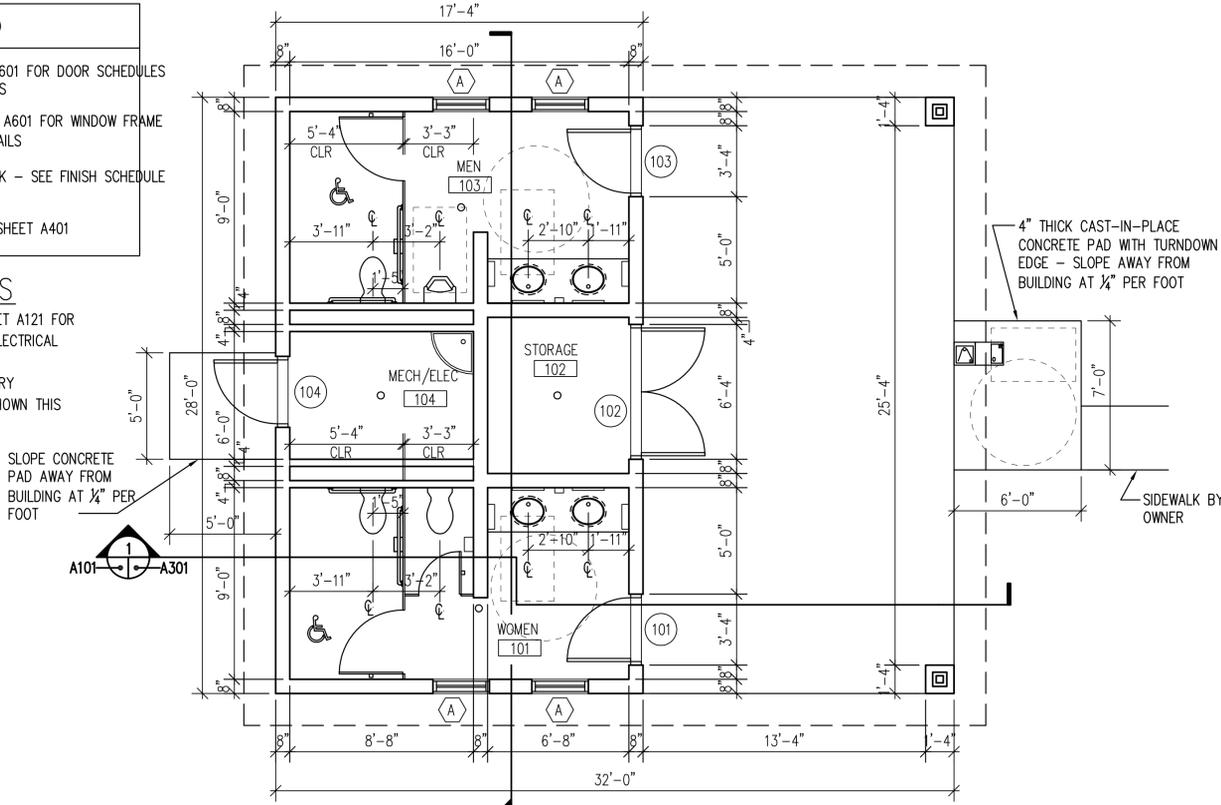
DETAIL D
 A101 | A101 SCALE: 3" = 1'-0" 0 3 6 12IN.

LEGEND

(XXX)	DOOR MARK - SEE SHEET A601 FOR DOOR SCHEDULES AND DOOR AND FRAME TYPES
(X)	WINDOW MARK - SEE SHEET A601 FOR WINDOW FRAME TYPES AND HEAD/JAMB DETAILS
ROOM NAME #	ROOM NAME & NUMBER MARK - SEE FINISH SCHEDULE ON SHEET A601
(X)	INTERIOR ELEVATION - SEE SHEET A401

GENERAL WORK NOTES

- SEE REFLECTED CEILING PLAN ON SHEET A121 FOR CEILING FINISH REQUIREMENTS. SEE ELECTRICAL FOR FIXTURE TYPE REQUIREMENTS.
- SEE SHEET A401 FOR TOILET ACCESSORY INFORMATION. FIXTURE CENTERLINES SHOWN THIS SHEET.



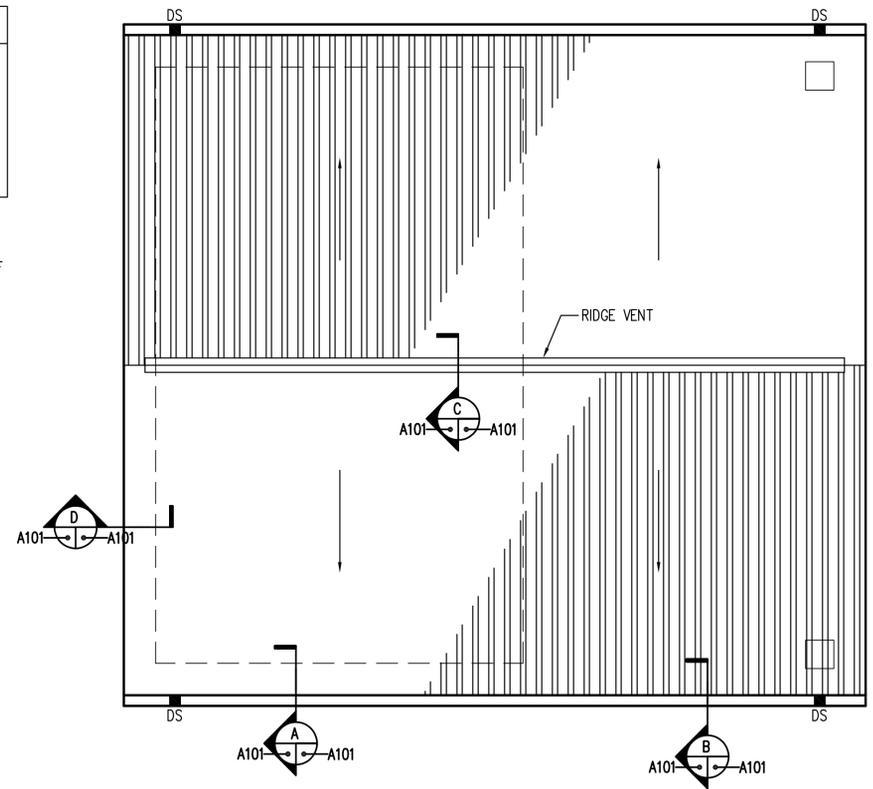
FLOOR PLAN
 SCALE: 1/4" = 1'-0" 0 1 2 4 8 12 FT.

ROOF PLAN LEGEND

DS	DOWNSPOUT
→	DIRECTION OF ROOF SLOPE
[Hatched Box]	STANDING SEAM METAL ROOF OVER PLYWOOD ROOF SHEATHING ON WOOD TRUSSES

ROOF PLAN NOTES

- COORDINATE LOCATIONS OF PLUMBING ROOF VENTS (VTR) WITH PLUMBING PLANS.



ROOF PLAN
 SCALE: 1/4" = 1'-0" 0 1 2 4 8 12 FT.

THE LANE GROUP
 119 N. MAIN STREET
 GALAX, VA 24333 | 276.236.6588
 BIG STONE GAP, VA | ARLINGTON, VA | GALAX, VA



GRAYSON COUNTY RESTROOM BUILDING
 GRAYSON COUNTY RECREATION PARK
 INDEPENDENCE, VIRGINIA

FLOOR PLAN, ROOF PLAN, DETAILS, AND NOTES

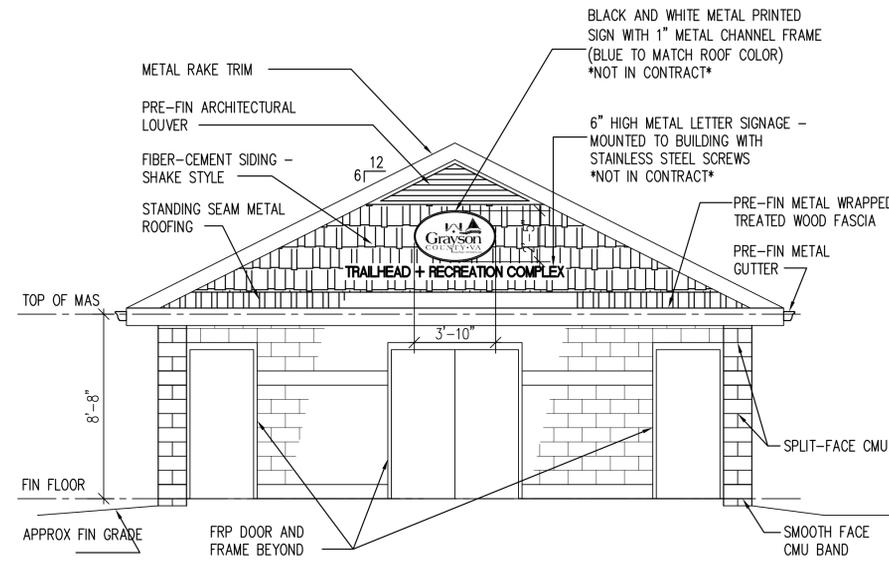
DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

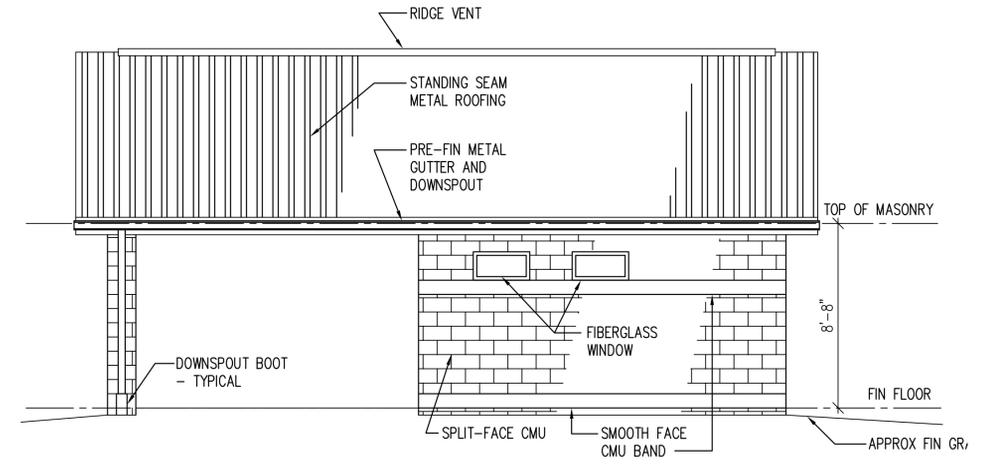
A101

THE LANE GROUP © 2015

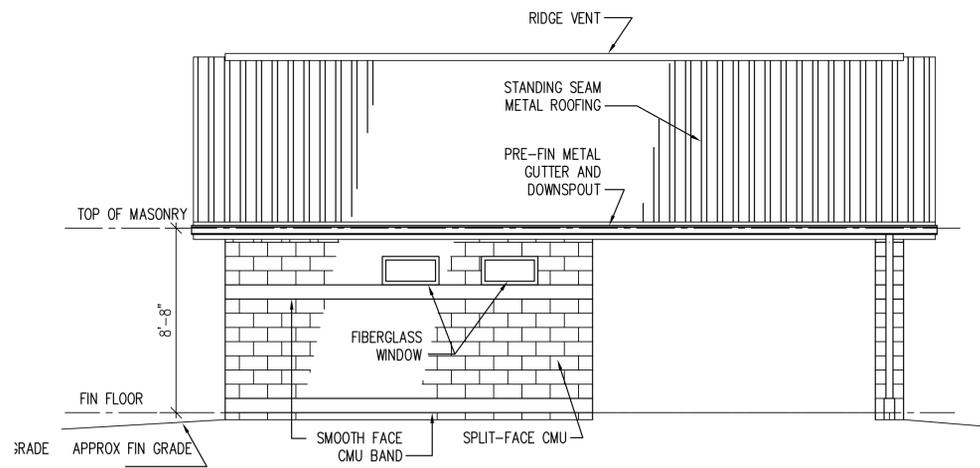


EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

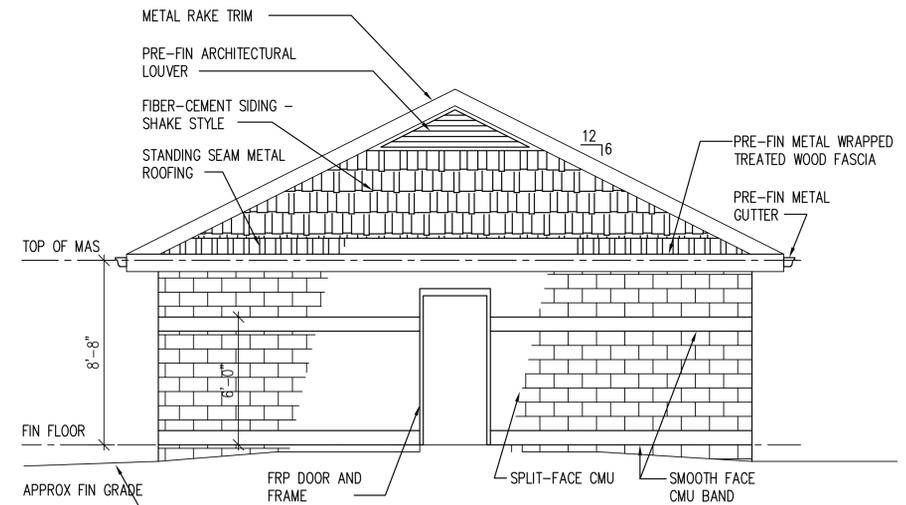
A101 A301



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

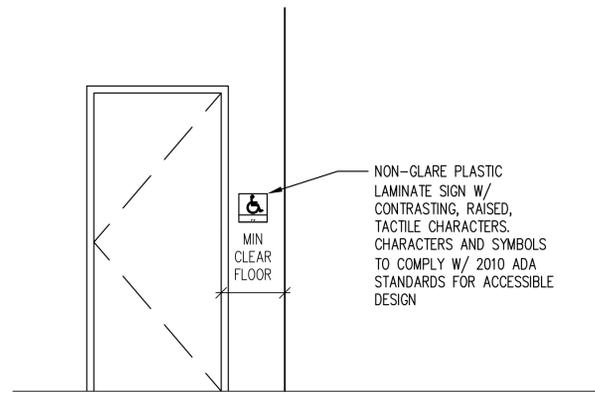


EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



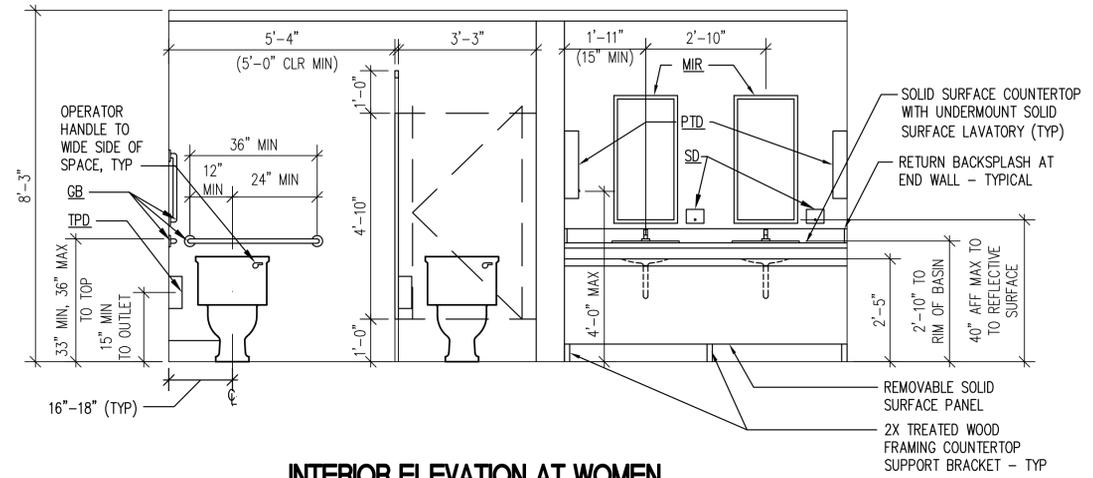
EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

NO.	REVISION

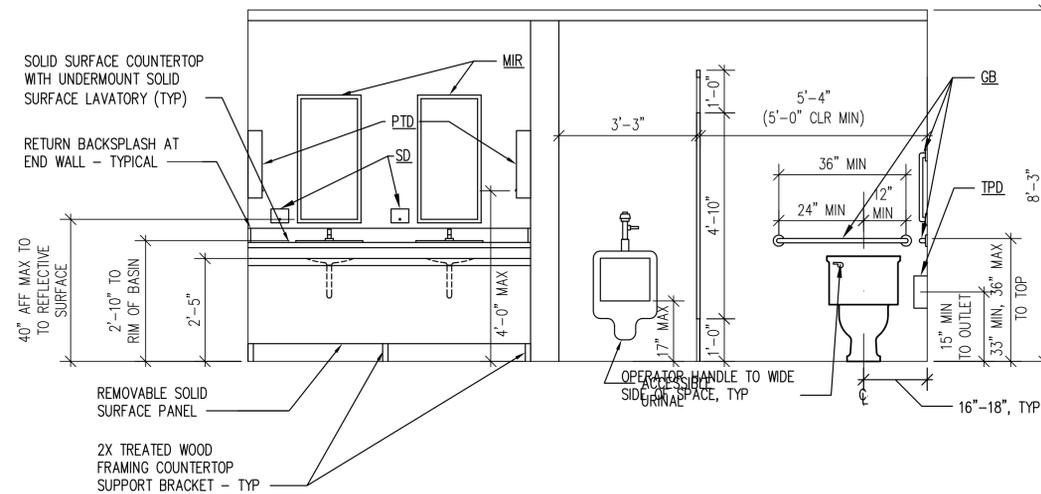


ACCESSIBLE SIGNAGE:
TACTILE CHARACTERS SHALL BE LOCATED 48" MIN ABOVE FINISHED FLOOR, MEASURED FROM THE BASELINE OF THE LOWEST TACTILE CHARACTER AND 60" MAX ABOVE FINISH FLOOR, MEASURED FROM THE BASELINE OF THE HIGHEST TACTILE CHARACTER. REFER TO THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

TYP DOOR SIGNAGE ELEVATION
SCALE: 1/2" = 1'-0"



INTERIOR ELEVATION AT WOMEN
SCALE: 1/2" = 1'-0"



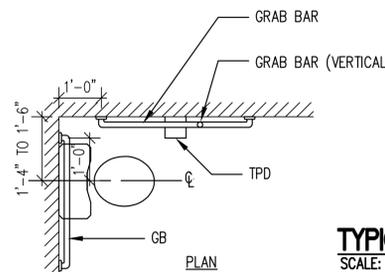
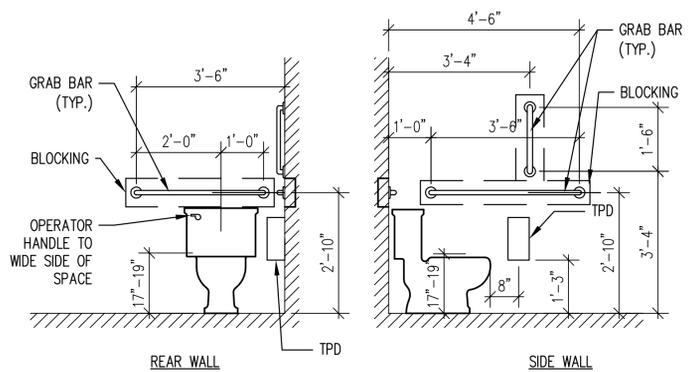
INTERIOR ELEVATION AT MEN
SCALE: 1/2" = 1'-0"

LEGEND:

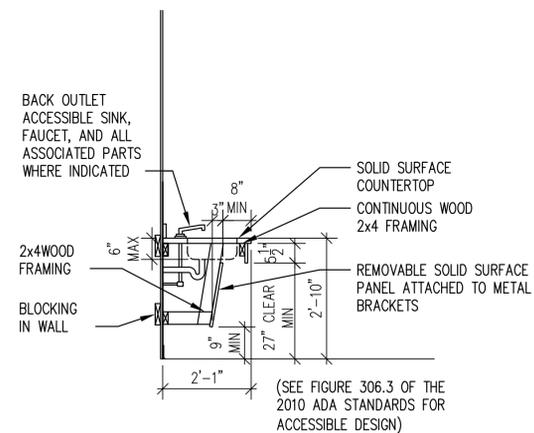
- CH COAT HOOKS
- TPD TOILET PAPER DISPENSER
- MIR MIRROR- (24" X 36")
- GB GRAB BAR
- SD SOAP DISPENSER
- PTD PAPER TOWEL DISPENSER
- WR WASTE RECEPTACLE, NIC

NOTES:

1. PROVIDE BLOCKING IN WALLS BEHIND ALL WALL MOUNTED ACCESSORIES AND GRAB BARS AS REQUIRED.
2. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO FABRICATION AND INSTALLATION OF ITEMS INDICATED.
3. INSTALL GRAB BARS TO WITHSTAND A HORIZONTAL FORCE OF 250 LB APPLIED AT ANY POINT COMPLYING WITH ASTM F446.
4. PROVIDE A COAT HOOK WITH BUMPER ON THE BACK OF ALL SINGLE USE TOILET ROOM DOORS.



TYPICAL TOILET PLANS
SCALE: 1/2" = 1'-0"



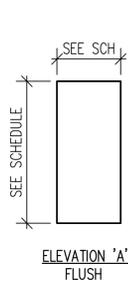
TYPICAL COUNTER SECTION
SCALE: 1/2" = 1'-0"

NO.	REVISION

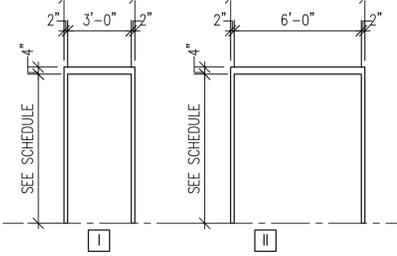
DOOR SCHEDULE												
MARK	DOOR							HEAD/JAMB	FRAME			REMARKS
	WIDTH	HEIGHT	THICKNESS	MATERIAL	TYPE	CORE	FINISH		MATERIAL	TYPE	FINISH	
101	3'-0"	7'-0"	1-3/4"	FRP	A	SOLID	FACTORY	A	FRP	I	FACTORY	
102	6'-0"	7'-0"	1-3/4"	FRP	A	SOLID	FACTORY	A	FRP	II	FACTORY	
103	3'-0"	7'-0"	1-3/4"	FRP	A	SOLID	FACTORY	A	FRP	I	FACTORY	24" X 24" LOUVER IN DOOR
104	3'-0"	7'-0"	1-3/4"	FRP	A	SOLID	FACTORY	A	FRP	I	FACTORY	

FINISH SCHEDULE								
ROOM NO.		FLOOR	BASE	WALL	WAINSCOT	CEILING	CLG HT	REMARKS
101	WOMEN	SEALED CONC	-	CMU (PAINT)		GWB (PAINT)	8'-3"	
102	STORAGE	SEALED CONC	-	CMU (PAINT)	--	GWB (PAINT)	8'-3"	
103	MEN	SEALED CONC	-	CMU (PAINT)	--	GWB (PAINT)	8'-3"	
104	MECH/ELEC	SEALED CONC	-	CMU (PAINT)	--	GWB (PAINT)	8'-3"	

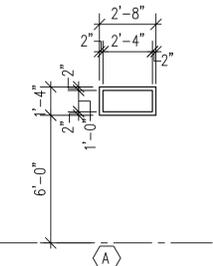
NOTE: PAINT ALL INTERIOR 2X TOP PLATE AND TRIM MATERIAL TO MATCH INTERIOR WALL COLOR



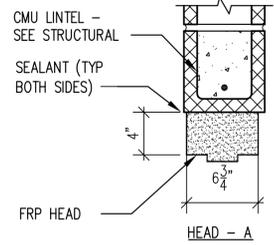
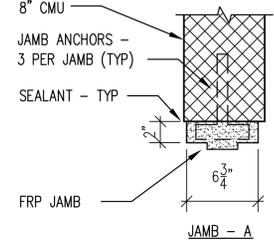
DOOR ELEVATION TYPE
SCALE: 1/4" = 1'-0"



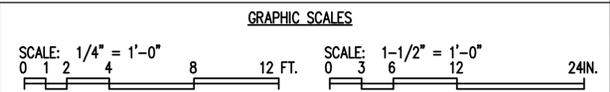
FRP DOOR FRAME TYPES
SCALE: 1/4" = 1'-0"



WINDOW FRAME ELEVATION
SCALE: 1/4" = 1'-0"



FRP FRAME HEAD/JAMB DETAIL
SCALE: 1-1/2" = 1'-0"



NO.	REVISION

STRUCTURAL NOTES:

BUILDING CODE
2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE
PART I - VIRGINIA CONSTRUCTION CODE
PART II - VIRGINIA REHABILITATION CODE
2012 INTERNATIONAL BUILDING CODE
ASCE 7-10
RISK CATEGORY
2012 IBC TABLE 1604.5

SLAB ON GRADE
SLAB-ON-GRADE IS NOT DESIGNED FOR CONCENTRATED LOADS SUCH AS RACKS OR FORK TRUCKS. 100 PSF

ROOF LIVE
MINIMUM UNIFORM DESIGN LOAD 20 PSF
MINIMUM CONCENTRATED LOAD (ALL PRIMARY ROOF MEMBERS) 300 LBS

SNOW
GROUND SNOW LOAD, P_g 25 PSF
FLAT ROOF SNOW LOAD, P_f 17.5 PSF
SNOW EXPOSURE FACTOR, C_e 1.0
THERMAL FACTOR, C_t 1.0
RAIN ON SNOW SURCHARGE 0.0 PSF

WIND
ULTIMATE DESIGN WIND SPEED, V_{ult} 115 MPH
NOMINAL DESIGN WIND SPEED, V_{asd} 84 MPH
WIND EXPOSURE CATEGORY B
INTERNAL PRESSURE COEFFICIENT, GC_{pi} +/-0.18
COMPONENTS & CLADDING SEE CHART

Roof Area	GCp +/- GCpi			Surface Pressure (psf)				
	10 sf	50 sf	100 sf	10 sf	50 sf	100 sf	250 sf	300 sf
Negative Zone 1	-1.08	-1.01	-0.98	-24.3 psf	-22.8 psf	-22.1 psf	-21.2 psf	-22.1 psf
Negative Zone 2	-1.88	-1.53	-1.38	-42.4 psf	-34.5 psf	-31.1 psf	-31.1 psf	-31.1 psf
Negative Zone 3	-2.78	-2.36	-2.18	-62.6 psf	-53.2 psf	-49.1 psf	-49.1 psf	-49.1 psf
Positive All Zones	0.68	0.54	0.48	16.0 psf	16.0 psf	16.0 psf	16.0 psf	16.0 psf
Overhang Zone 1&2	-2.20	-2.20	-2.20	-49.6 psf	-49.6 psf	-49.6 psf	-49.6 psf	-49.6 psf
Overhang Zone 3	-3.70	-2.86	-2.50	-83.4 psf	-64.5 psf	-56.3 psf	-56.3 psf	-56.3 psf

a = 3 ft

Walls Area	GCp +/- GCpi			Surface Pressure (psf)				
	10 sf	100 sf	500 sf	10 sf	50 sf	100 sf	250 sf	500 sf
Negative Zone 4	-1.28	-1.10	-0.98	-28.8 psf	-26.1 psf	-24.9 psf	-23.3 psf	-22.1 psf
Negative Zone 5	-1.58	-1.23	-0.98	-35.6 psf	-30.0 psf	-27.6 psf	-24.5 psf	-22.1 psf
Positive Zone 4 & 5	1.18	1.00	0.88	26.6 psf	23.8 psf	22.6 psf	21.0 psf	19.8 psf

SEISMIC
SEISMIC IMPORTANCE FACTOR, I_e 1.0
MAPPED SPECTRAL RESPONSE, S_s 24.40%
MAPPED SPECTRAL RESPONSE, S₁ 9.10%
SITE CLASS D
SPECTRAL RESPONSE COEFFICIENT, S_{ds} 26.00%
SPECTRAL RESPONSE COEFFICIENT, S_{d1} 14.600%
SEISMIC DESIGN CATEGORY C
SEISMIC-FORCE RESISTING SYSTEM ASCE 7 - TABLE 12.2-1

ORDINARY REINFORCED MASONRY SHEAR WALLS
SEISMIC RESPONSE COEFFICIENT, C_s 0.13
SEISMIC MODIFICATION FACTOR, R 2.0
ANALYSIS PROCEDURE EQ. LATERAL FORCE
DESIGN BASE SHEAR 7 KIPS

- STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS AND SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY THE REQUIREMENT OF OTHER TRADES FOR SLEEVES, CHASES, HANGERS, INSERTS, ANCHORS, HOLES AND ADDITIONAL ITEMS TO BE PLACED OR SET SIMULTANEOUS WITH STRUCTURAL WORK.
- DETAILS SHOWN ARE TYPICAL AND APPLY TO SIMILAR OR LIKE CONDITIONS.
- DO NOT SCALE DRAWINGS, FOLLOW DIMENSIONS ON PLANS.
- DO NOT CHANGE THE SIZE, LENGTH OR SPACING OF STRUCTURAL ELEMENTS WITHOUT APPROVAL OF STRUCTURAL ENGINEER.
- DESIGN, ADEQUACY, AND SAFETY OF ERECTION BRACING, SHORING AND TEMPORARY SUPPORTS IS THE SOLE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH OSHA SAFETY REGULATIONS.
- CONTRACTOR SHALL VERIFY FLOOR AND ROOF MOUNTED MECHANICAL EQUIPMENT WEIGHTS, FLOOR AND/OR ROOF OPENINGS SIZES AND LOCATIONS, AND SIZES OF EQUIPMENT PADS, WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND SUPPLIERS. NOTIFY ENGINEER IF LOADS ARE HIGHER THAN THOSE SHOWN.

H. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS INCLUDING DIMENSIONS TO GRADES, UTILITIES, FRAMING, FOUNDATIONS AND HIDDEN CONDITIONS AND COORDINATE THESE CONDITIONS WITH THE CONTRACT DOCUMENTS. NOTIFY THE ARCHITECT AND ENGINEER OF EXISTING CONDITIONS THAT ARE NOT AS SHOWN.

EARTHWORK FOR STRUCTURES NOTES:

- SUBGRADES AND COMPACTED FILL SHALL BE OBSERVED BY A GEOTECHNICAL ENGINEER REGISTERED AS A PROFESSIONAL ENGINEER IN THE COMMONWEALTH OF VIRGINIA TO VERIFY CONFORMANCE. GEOTECHNICAL ENGINEER TO EVALUATE NEED FOR PROOF ROLLING OPERATIONS UPON EXPOSURE OF SUBGRADES, WEAK OR DISTURBED SOILS EXPOSED DURING ANY PROOF ROLLING TO BE REMOVED AND REPLACED WITH COMPACTED FILL AT GEOTECHNICAL ENGINEER'S DIRECTION.
- SOIL DESIGN PARAMETERS:

1. MIN. ALLOWABLE BEARING PRESSURE	2000 PSF
2. UNIT WEIGHT OF SOIL	110 PCF
3. MODULUS OF SUBGRADE REACTION	150 PCI
- SLAB-ON-GRADE PREPARATION:
 - INTERIOR SLABS:
 - UNDERLAIN BY 4 INCHES (MIN.) NO. 57 CRUSHED STONE
 - INTERIOR SLABS SHALL BE UNDERLAIN BY (10)-MIL (MIN.) ASTM 1745 PLASTIC VAPOR RETARDER (ON TOP OF STONE)
 - EXTERIOR SLABS:
 - UNDERLAIN BY MINIMUM 6 INCHES THICK NO. 57 CRUSHED STONE
- COMPACTED FILL/BACKFILL:
 - PERFORM DENSITY AND MOISTURE TESTING: MINIMUM OF ONE FIELD DENSITY TEST PER 2500 SQ FT PER LIFT PLACED (MINIMUM OF ONE TEST PER LIFT)
 - PLACED IN LOOSE LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS FOR GENERAL BACKFILL/FILL, 4 INCHES IN THICKNESS USING LIGHT WEIGHT EQUIPMENT (LESS THAN 3000-LBS).
 - COMPACTED TO AT LEAST 95 PERCENT MAXIMUM DRY DENSITY PER ASTM D-698, STANDARD PROCTOR.
 - CONSIST OF MATERIALS CLASSIFYING AS ONE OF THE FOLLOWING:
 - SC, SM, SP, SN, GC, GM, GP OR GN PER ASTM D-2487
 - COMPACTED VDOT NO. 21A DENSE GRADED CRUSHED STONE (CRUSHER RUN)
 - FLOWABLE FILL - 200 PSI MIN. COMPRESSIVE STRENGTH
 - MOISTURE CONTENT WITHIN (3) PERCENT OF OPTIMUM
 - SHALL BE FREE OF BOULDERS, ORGANICS, TRASH, PARTICLES OF 3 INCHES OR MORE IN DIAMETER, AND OTHER DELETERIOUS MATERIAL
 - PLASTICITY INDEX LESS THAN 20
 - USE ONLY MECHANICAL HAND TAMPS AND/OR SMALL VIBRATORY COMPACTORS/ROLLERS, NOT EXCEEDING 3000 POUNDS STATIC WEIGHT, WHEN CLOSER TO BELOW GRADE WALLS THAN A DISTANCE EQUAL TO THE HEIGHT OF THE BACKFILL ABOVE THE TOP OF THE FOUNDATIONS (1:1 SLOPE)
 - SUBGRADES REQUIRING UNDERCUTTING SHALL BE FILLED WITH COMPACTED FILL AS DESCRIBED ABOVE TO THE ORIGINAL DESIGN SUBGRADE ELEVATION.
- UNSUITABLE, LOOSE OR SOFT SOIL SHALL BE REMOVED FROM THE EXCAVATION PRIOR TO PLACING FILL, STONE OR CONCRETE. DISTURBED, UNSUITABLE, OR EXCAVATED MATERIAL OCCURRING BELOW 45 DEGREES FROM HORIZONTAL BEGINNING AT THE BOTTOM MOST OUTER EDGE OF WALLS OR FOUNDATIONS SHALL BE REPLACED WITH COMPACTED FILL.
- EXCAVATIONS SHALL BE BRACED OR SLOPED IN ACCORDANCE WITH CURRENT OSHA REGULATIONS. THE CONTRACTOR SHALL STAGE HIS CONSTRUCTION SEQUENCE SO AS NOT TO UNDERMINE (AN ADJACENT BUILDING, PREVIOUSLY CAST FOUNDATION, SLOPE OR OTHER STRUCTURE) DURING THE CONSTRUCTION PROGRESS.
- BLASTING IS NOT PERMITTED.
- IF ROCK OR DISINTEGRATED ROCK IS ENCOUNTERED AT FOUNDATION DESIGN SUBGRADE ELEVATION, UNDERCUT THIS MATERIAL ONE FOOT MINIMUM AND REPLACE WITH COMPACTED FILL.
- EVIDENCE OF KARST ACTIVITY OR SINKHOLES SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER PRIOR TO PROCEEDING.
- SLOPE EXCAVATIONS, INSTALL SMALES AND/OR DEWATERING PUMPS TO MAINTAIN DRY SOIL CONDITIONS AND PREVENT STANDING WATER IN EXCAVATIONS FOR FOOTINGS AND SLABS.

CONCRETE AND REINFORCEMENT NOTES:

- CONCRETE WORK SHALL BE IN FULL ACCORDANCE WITH:
 - AMERICAN CONCRETE INSTITUTE (ACI) 301, 315, AND 318
 - CONCRETE REINFORCING STEEL INSTITUTE (CRSI) RECOMMENDED PRACTICE OF PLACING REINFORCING BARS
 - ACI 117 FOR PLACEMENT TOLERANCES (CONCRETE AND REINFORCEMENT)
 - ACI 302.1 CONCRETE FLOOR AND SLAB CONSTRUCTION
 - ACI 306 AND ACI 305 COLD/HOT WEATHER CONCRETING
 - ACI 308.1 FOR CURING OF CONCRETE
 - ACI 304R-05 GUIDE FOR CONSOLIDATION OF CONCRETE
 - ACI 347-04 (CHAPTER 5) GUIDE TO FORMWORK FOR CONCRETE
 - ACI "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES".
- GENERAL CONCRETE SHALL BE:

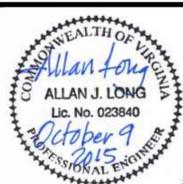
LOCATION	WEIGHT	STRENGTH (PSI)	AIR (%)	SLUMP (IN) (+/- 1/2)	MAX W/C RATIO
FOUNDATIONS	NW	3000	N/A	5	0.50
SLAB ON GRADE (W FIBROUS)	NW	3000	<3	4	0.45
EXTERIOR SLAB ON GRADE (W FIBROUS)	NW	4000	4-6	4	0.45
MISCELLANEOUS	NW	3000	N/A	4	0.50

FIELD SAMPLING SHALL BE OBTAINED FROM MIDDLE OF BATCH

- NORMAL WEIGHT (NW) CONCRETE SHALL BE 145 - 150 PCF
- SLUMPS ABOVE ARE PRIOR TO ADDITION OF PLASTICIZERS OR MID RANGE WATER REDUCER. MAXIMUM SLUMP AFTER APPROVED ADDITIVES SHALL BE 8 INCHES.
- MATERIALS:
 - CEMENT: ASTM C 150 TYPE I/II
 - FLY ASH: ASTM C618 CLASS C OR F, 20% MAX.
 - AGGREGATE: ASTM C33, GRADED, 1-1/2 INCH MAX
 - FIBROUS REINFORCEMENT (CRACK CONTROL): ASTM C 1116 TYPE III AND ASTM C1018 PERFORMANCE LEVEL 1 IS 100 PERCENT VIRGIN POLYPROPYLENE, FIBRILLATED FIBERS MINIMUM VOLUME PER CUBIC YARD OF 0.1 PERCENT (1.5 POUNDS) WHEN INDICATED, FIBER SHALL BE IN ADDITION TO STEEL REINFORCEMENT.
- SLABS GENERAL
 - CEMENTITIOUS MATERIAL CONTENT IN ACCORDANCE WITH TABLE 6.2 OF ACI 302.1.
 - MODULUS OF RUPTURE (MOR) PER ASTM C 496:
 - 3000 PSI MIX - 492 PSI
 - 4000 PSI MIX - 569 PSI
 - MORTAR FRACTION (VOLUME PERCENTAGE OF CEMENTITIOUS MATERIALS, AGGREGATE, WATER AND AIR THAT PASS THE NO. 8 SIEVE) SHALL BE 53 TO 57 PERCENT.
 - USE BOND BREAK ALONG FOUNDATION WALLS, AROUND COLUMNS AND OTHER ITEMS THE SLAB IS CAST AGAINST.
 - FLOOR FLATNESS:
 - PER ACI 302
- SLAB CONTROL JOINTS:
 - CUT IN ACCORDANCE WITH ACI 302.1R
 - CUT AS SOON AS POSSIBLE, BUT IN NO CASE MORE THAN 4 HOURS OF SLAB PLACEMENT
 - USE OF EARLY ACCESS SAW
 - LENGTH TO WIDTH RATIOS OF PATTERN SHALL NOT EXCEED 1.25
 - JOINTS SHOWN ON THE PLANS ARE GUIDELINES. CONTRACTOR SHALL SUBMIT PLAN OF JOINT LOCATIONS AND PROPOSED INSTALLATION.
- REINFORCING:
 - ASTM A615, GRADE 60 FOR DEFORMED BARS
 - ASTM A185, FOR FLAT SHEET WELDED WIRE FABRIC
 - ASTM A496, FOR DEFORMED BAR ANCHORS
 - DEVELOPMENT LENGTH FOR REINFORCEMENT (db = BAR DIAMETER):

STRENGTH	DEVELOPMENT LENGTH, LD		HOOK, LDH
3000 PSI	#6 AND SMALLER 44 db	#1 AND LARGER 55 db	22 db
4000 PSI	38 db	47 db	19 db
 - DEVELOPMENT LENGTH NOT LESS THAN 12 INCHES. HOOK DEVELOPMENT LENGTH NOT LESS THAN 6 INCHES. DEVELOPMENT LENGTH TOP BAR REINFORCING: ABOVE MULTIPLIED BY 1.3. CLASS B TENSION LAPS: ABOVE MULTIPLIED BY 1.3.
 - SPLICES SHALL BE CLASS B TENSION SPLICES UNLESS NOTED. WELDED WIRE FABRIC SHALL HAVE A MINIMUM LAP OF 6 INCHES. MECHANICAL OR WELDED SPLICES SHALL DEVELOP 125% OF THE BAR YIELD STRENGTH.
 - CONCRETE CLEAR COVER SHALL BE (UNLESS NOTED OTHERWISE):
 - BELOW GRADE (UNFORMED) 3"
 - BELOW GRADE (FORMED) 2"
 - EXPOSED TO WEATHER OR WATER 2"
 - PROVIDE DONNELS IN FOUNDATIONS TO MATCH THE SIZE AND QUANTITY AS VERTICAL WALL, PIER OR COLUMN REINFORCEMENT.
 - PROVIDE CORNER BARS AT CORNERS AND INTERSECTING WALLS.
 - PROVIDE (2) #4 X 3'-0" LONG AT ALL SLAB RE-ENTRANT CORNERS
- CONCRETE FINISHES:
 - COORDINATE FLOOR SLAB LAYOUT WITH ARCHITECTURAL DRAWINGS FOR EXACT LIMITS, EXTENT OF DEPRESSIONS AND FINISHES.
 - EXTERIOR SIDEWALKS, RAMPS, STEPS AND PLATFORMS SHALL RECEIVE A NONSLIP BROOM FINISH
 - PROVIDE 1-INCH CHAMFER AT EXPOSED CONCRETE CORNERS
- REINFORCING STEEL AND EMBEDDED ITEMS SHALL BE ACCURATELY PLACED IN THE POSITIONS SHOWN, TIED AND SUPPORTED BEFORE CONCRETE IS PLACED TO PREVENT DISPLACEMENT BEYOND PERMITTED TOLERANCES.
- WHEN APPROVED BY STRUCTURAL ENGINEER PRIOR TO INSTALLATION, EPOXY GROUTING OF DEFORMED BAR DONNELS OR ANCHOR RODS INTO EXISTING OR HARDENED CONCRETE SHALL BE INSTALLED ACCORDING TO EPOXY MANUFACTURERS RECOMMENDATION TO PROVIDE FULL DEVELOPMENT OF THE BAR OR BOLT FOR THE SPECIFIC CONCRETE STRENGTH AT POINT OF ATTACHMENT.
 - APPLY LOADS ONLY AFTER EPOXY HAS REACHED FULL STRENGTH.
 - ALL PARTS OF ANCHORING SYSTEM (RODS, NUTS, WASHERS, BITS, EPOXY, ETC.) SHALL BE FROM A SINGLE SUPPLIER.
 - WORK MUST BE PERFORMED BY ACI CERTIFIED EPOXY ANCHOR INSTALLER.

THE LANE GROUP



GRAYSON COUNTY
RESTROOM BUILDING
GRAYSON COUNTY RECREATION PARK
INDEPENDENCE, VIRGINIA

STRUCTURAL NOTES

DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

S001



2103 FOREST DRIVE, SUITE 3
GALAX, VIRGINIA 22405
433.997.3314

119 N. MAIN STREET
GALAX, VA 22433 | 276.236.4588
BIG STONE GAP, VA | ABRINGDON, VA | GALAX, VA

CONCRETE MASONRY NOTES:

- A. MASONRY CONSTRUCTION SHALL BE IN FULL CONFORMANCE WITH:
1. AMERICAN CONCRETE INSTITUTE (ACI) 530.1/AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 6/ THE MASONRY SOCIETY (TMS) 602 "SPECIFICATION FOR MASONRY STRUCTURES" - ALLOWABLE STRESS DESIGN
 2. ACI 530.1 FOR PLACEMENT TOLERANCES FOR MASONRY & REINFORCEMENT
 3. ACI 530.1 FOR COLD/HOT WEATHER METHODS
 4. ACI "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES"
 5. ASTM C91 @STANDARD SPECIFICATION FOR MASONRY CEMENT
- B. MASONRY UNITS:
1. ASTM C40 GRADE N TYPE II, NON-MOISTURE CONTROLLED
 2. MINIMUM NET COMPRESSIVE STRENGTH:
- CONCRETE MASONRY UNITS: 1900 PSI NET AREA AT TIME OF DELIVERY
MASONRY ASSEMBLAGE (Fm): 1500 PSI AT 28 DAYS
- C. MASONRY CEMENT:
1. TYPE S: MASONRY IN CONTACT WITH EARTH, BELOW GRADE, REINFORCED UNIT MASONRY, ALL EXTERIOR WALLS AND LOAD BEARING WALLS
 2. TYPE N: INTERIOR NON-LOAD BEARING WALLS
- D. GROUT:
1. ASTM C-416 FINE OR COURSE PER TABLE 7 OF ACI 530.1
 2. MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2000 PSI
 3. BE CONSOLIDATED BY MECHANICAL VIBRATION
 4. PLACED PER SECTION 3.5 OF ACI 530.1
- E. REINFORCING:
1. ASTM A615, GRADE 60 FOR DEFORMED BARS
 2. PROVIDE 9 GAGE LADDER TYPE JOINT REINFORCING AT 16" O.C. VERTICALLY, ABOVE AND BELOW EACH OPENING (EXTEND 24 INCHES PAST OPENING) IN MASONRY WALLS. INCORPORATE T'S AND EL'S AT CORNERS, SPLICE 8-INCHES
 3. MINIMUM REINFORCEMENT, UNLESS NOTE OTHERWISE: VERTICAL (I) -#4 VERTICAL BAR AT EACH CORNER, INTERSECTING WALLS, END OF WALLS, 10'-0" O.C. AND ALONG EACH SIDE OF OPENINGS AND CONTROL JOINTS
 4. MAINTAIN REINFORCEMENT SPACING ABOVE AND BELOW OPENINGS
 5. GROUT CELLS CONTAINING REINFORCEMENT FULL HEIGHT (AND ALL CELLS BELOW GRADE)
 6. LOCATE VERTICAL REINFORCEMENT IN MIDDLE OF CELLS UNLESS NOTED OTHERWISE. USE REBAR POSITIONERS.
 7. DEVELOPMENT LENGTH, SPLICES AND HOOKS, REFER TO SCHEDULE
 8. PROVIDE DOVELS IN FOUNDATIONS/SLABS TO MATCH THE SIZE, QUANTITY AND SPACING OF VERTICAL REINFORCEMENT
 9. SHOP DRAWINGS SHALL CLEARLY INDICATE REBAR PLACEMENT AND INCLUDE PLAN VIEWS, ELEVATIONS AND SECTIONS
- F. BRACING AND GENERAL CONSTRUCTION OF MASONRY WALLS:
1. INSTALL AND MAINTAIN BRACING AND WARNINGS IN ACCORDANCE WITH BIA/LUNA/MCAA/NCMA/FCA'S @STANDARD PRACTICE FOR BRACING MASONRY WALLS UNDER CONSTRUCTION
- G. PIPES AND CONDUIT WITHIN MASONRY SHALL BE PLACED VERTICALLY WITHIN CELLS. HORIZONTAL RUNS OF CONDUIT WITHIN WALLS SHALL BE LIMITED TO THE SPACE BETWEEN THE VERTICAL REINFORCEMENT LOCATIONS. CONDUIT IS NOT TO INTERFERE WITH REINFORCEMENT OR GROUT PLACEMENT. SEE THE MECHANICAL AND/OR ELECTRICAL PORTION OF THE CONTRACT DOCUMENTS FOR LOCATION OF SLEEVES AND ACCESSORIES. REFER TO APPROPRIATE PENETRATION DETAILS.
- H. SEE PLANS FOR LINTEL SCHEDULES.
- I. MORTAR PLACEMENT: FULL BEDDING

PREFABRICATED WOOD TRUSS NOTES:

- A. DESIGN, DETAILING, FABRICATION AND ERECTION SHALL COMPLY WITH:
1. TPI I, NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION
 2. TPI DSB, RECOMMENDED DESIGN SPECIFICATION FOR TEMPORARY BRACING OF METAL PLATE CONNECTED WOOD TRUSSES
 3. TPI HIB, COMMENTARY AND RECOMMENDATIONS FOR HANDLING, INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES
 4. TPI, QUALITY CONTROL MANUAL
 5. AMERICAN INSTITUTE OF TIMBER CONSTRUCTION - TIMBER CONSTRUCTION STANDARDS
 6. AMERICAN FOREST PRODUCTS ASSOCIATION - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION AND SUPPLEMENT
 7. NATIONAL DESIGN SPECIFICATION (NDS) FOR WOOD CONSTRUCTION WITH SUPPLEMENTS BY AMERICAN FOREST AND PAPER ASSOCIATION
- B. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF VIRGINIA WHICH INCLUDES DESIGN OF TRUSS, TRUSS CONNECTIONS, AND PROVIDES DESIGN LOADING AND REACTIONS APPLIED TO THE SUPPORTING STRUCTURE.
1. FOUNDATION AND FRAMING DESIGN IS BASED UPON TRUSS LAYOUT INDICATED. IF ALTERNATE TRUSS LAYOUT IS PROPOSED, SHOP DRAWINGS MUST CLEARLY INDICATE THE REQUESTED VARIANCE, THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING SUPPORT POINTS AND FOUNDATION CHANGES AND ENGINEER RESERVES THE RIGHT TO CHARGE FOR FRAMING/FOUNDATION MODIFICATIONS.

- C. WOOD TRUSS FRAMING MATERIALS SHALL BE:
1. MINIMUM NO. 2 GRADE SOUTHERN PINE PER AGENCY CERTIFIED BY ALSO
 2. SURFACE DRY AT 19 PERCENT MAXIMUM MOISTURE CONTENT
 3. METAL FRAMING ANCHORS AND ACCESSORIES:
 - a. GALVANIZED 660
 - b. ASTM A 653, OR HSLAS TYPE A OR B
 4. BOLTS/NUTS: ASTM A307 / ASTM A563
 5. LAG SCREWS: ANSI/ASME STANDARD B10.2.1
 6. WOOD SCREWS: ASME B10.6.1
 7. NAILS: ASTM F1667
- D. WOOD CONNECTORS
1. ALL WOOD CONNECTORS TO BE MANUFACTURED BY SIMPSON STRONG TIE OR APPROVED EQUAL. TO BE CONSIDERED EQUAL, THE CONNECTOR MUST BE CONFIGURED SIMILAR AND HAVE THE SAME OVERALL STRUCTURAL QUALITIES AS THE SIMPSON EQUIVALENT MODEL.
 2. WHERE CONNECTORS ARE TO BE USED AT MASONRY OR CONCRETE, USE SIMPSON TITEN SCREWS INSTEAD OF NAILS FOR CONNECTORS.
- E. TRUSS MANUFACTURER SHALL PROVIDE INFORMATION, HARDWARE AND ACCESSORIES REQUIRED FOR TRUSS BRACING AND CONNECTIONS. CONTRACTOR SHALL INSTALL TEMPORARY AND PERMANENT BRACING AND CONNECTORS AS REQUIRED.

STRUCTURAL WOOD NOTES:

- A. DESIGN, DETAILING, FABRICATION AND ERECTION SHALL COMPLY WITH:
1. AMERICAN INSTITUTE OF TIMBER CONSTRUCTION - TIMBER CONSTRUCTION STANDARDS
 2. AMERICAN FOREST PRODUCTS ASSOCIATION - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION AND SUPPLEMENT
 3. NATIONAL DESIGN SPECIFICATION (NDS) FOR WOOD CONSTRUCTION WITH SUPPLEMENTS BY AMERICAN FOREST AND PAPER ASSOCIATION

LAMINATED VENEER LUMBER (LVL)

1. APA/EWS FRL-501 @PERFORMANCE STANDARD FOR APA EWS LAMINATED VENEER LUMBER

PLYWOOD

1. AMERICAN PLYWOOD ASSOCIATION (APA) STANDARDS

FASTENING

1. TABLE 2304.9.1, 2012 BUILDING CODE

B. MATERIALS SHALL COMPLY WITH:

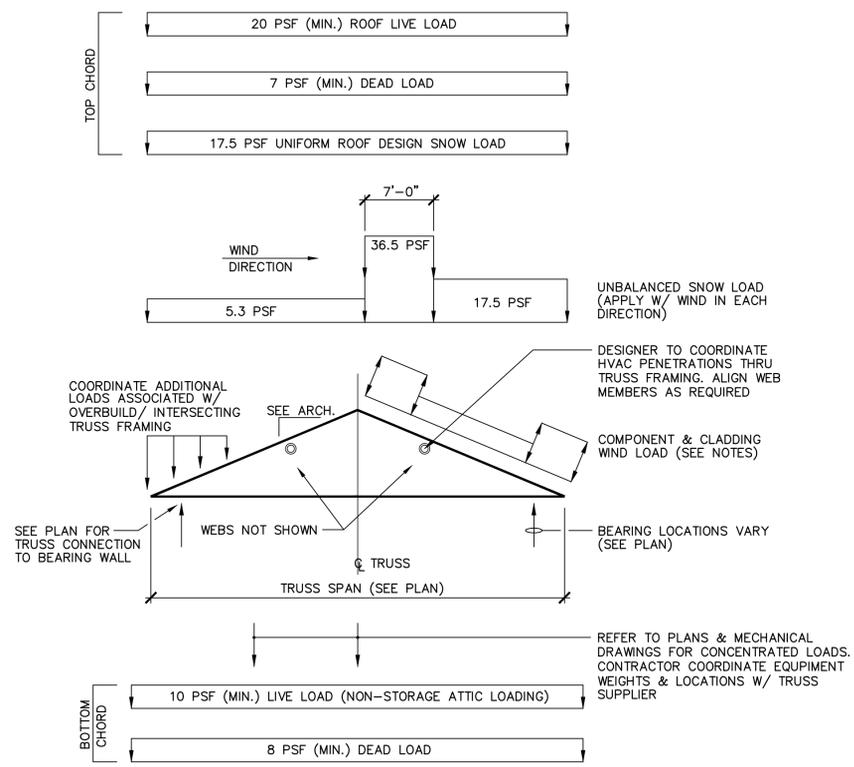
1. MINIMUM NO. 2 GRADE SOUTHERN PINE PER AGENCY CERTIFIED BY ALSO
2. SURFACE DRY AT 19 PERCENT MAXIMUM MOISTURE CONTENT
3. STEEL PLATES: ASTM A36, WELDING E70XX ELECTRODES
4. BOLTS/NUTS: ASTM A307 / ASTM A563
5. LAG SCREWS: ANSI/ASME STANDARD B10.2.1
6. WOOD SCREWS: ASME B10.6.1 GALVANIZED
7. NAILS: ASTM F1667 GALVANIZED
8. FASTENERS FOR PRESSURE TREATED LUMBER: ASTM F 1667 STAINLESS STEEL
9. PLYWOOD: APA RATED AS INDICATED
 - a. ROOF SHEATHING SHALL BE:

THICKNESS	15/32
SPAN RATING	24/0
GRADE STRESS LEVEL	5-3
SPECIES GROUP	4
EXPOSURE CLASSIFICATION	EXTERIOR
ATTACHMENT @d NAILS AT 6 INCHES ON CENTER	
 - b. WHERE CONNECTORS ARE USED AT MASONRY OR CONCRETE, USE SIMPSON TITEN SCREWS INSTEAD OF NAILS FOR CONNECTORS, OR EQUAL

1. PLYWOOD SHALL BE INSTALLED CONTINUOUS OVER TWO OR MORE SPANS WITH FACE GRAIN PERPENDICULAR TO SUPPORTS. ALL PANEL JOINTS SHALL OCCUR OVER FRAMING. PROVIDE EDGE SUPPORT WHERE INDICATED ON DRAWINGS OR AS RECOMMENDED BY APA.

D. PRESERVATIVE TREATMENT

1. PER AMERICAN WOOD PRESERVERS' ASSOCIATION ANPA C2
 2. MINIMUM RETENSION OF PRESERVATIVE RETAINED:
- ABOVE GROUND 0.25 PCF
3. KILN-DRY LUMBER AFTER PRESERVATIVE TREATMENT TO 19 PERCENT MAXIMUM MOISTURE CONTENT
 4. TREAT: EXPOSED WOOD MEMBERS, SILLS, GANTS, NAILERS, CURBS, EQUIPMENT BASE SUPPORTS, LEDGERS, MEMBERS IN CONTACT WITH MASONRY OR CONCRETE, EXTERIOR POSTS, MEMBERS THAT ARE LESS THAN 18 INCHES ABOVE GROUND, AND DECKING



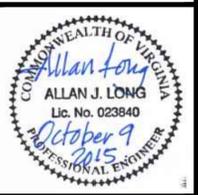
WOOD TRUSS LOADING DIAGRAM

N.T.S. (GABLE)

NOTES:

1. CONFIGURATIONS VARY (SEE PLAN).
2. SEE STRUCTURAL NOTES FOR ADDITIONAL INFORMATION CONCERNING LOADS INCLUDING COMPONENT AND CLADDING LOADS.
3. DIAGRAM IS SCHEMATIC ONLY. SUBMIT SHOP DRAWINGS FOR EACH CONFIGURATION AND CONNECTION DATA.
4. PROVIDE VERTICAL 2x FRAMING AT 16" ON CENTER FOR ENDWALL CONSTRUCTION FOR SHEATHING CONNECTIONS. USE COMPONENT AND CLADDING VALUES FOR LATERAL WIND LOADS ON END TRUSSES.
5. WIND DIRECTION VARIES - TRUSSES TO BE DESIGNED FOR EACH CONDITION.
6. REDUCE / DISREGARD DEAD LOADS IN UPLIFT CONDITION CHECKS AS REQUIRED.
7. TRUSS DESIGNER TO COORDINATE LOAD COMBINATIONS AND DRIFT / UNBALANCED SNOW LOAD OVERLAP CONDITIONS. COORDINATE AND INCLUDE INTERCONNECTED FRAMING.

THE LANE GROUP
119 N. MAIN STREET
GALAX, VA 24333 | 776.236.4888
BIG STONE GAP, VA | ABRINGDON, VA | GALAX, VA



GRAYSON COUNTY RESTROOM BUILDING
GRAYSON COUNTY RECREATION PARK
INDEPENDENCE, VIRGINIA

STRUCTURAL NOTES AND TRUSS LOADING DIAGRAM

DATE: OCTOBER 9, 2015

NO.	REVISION

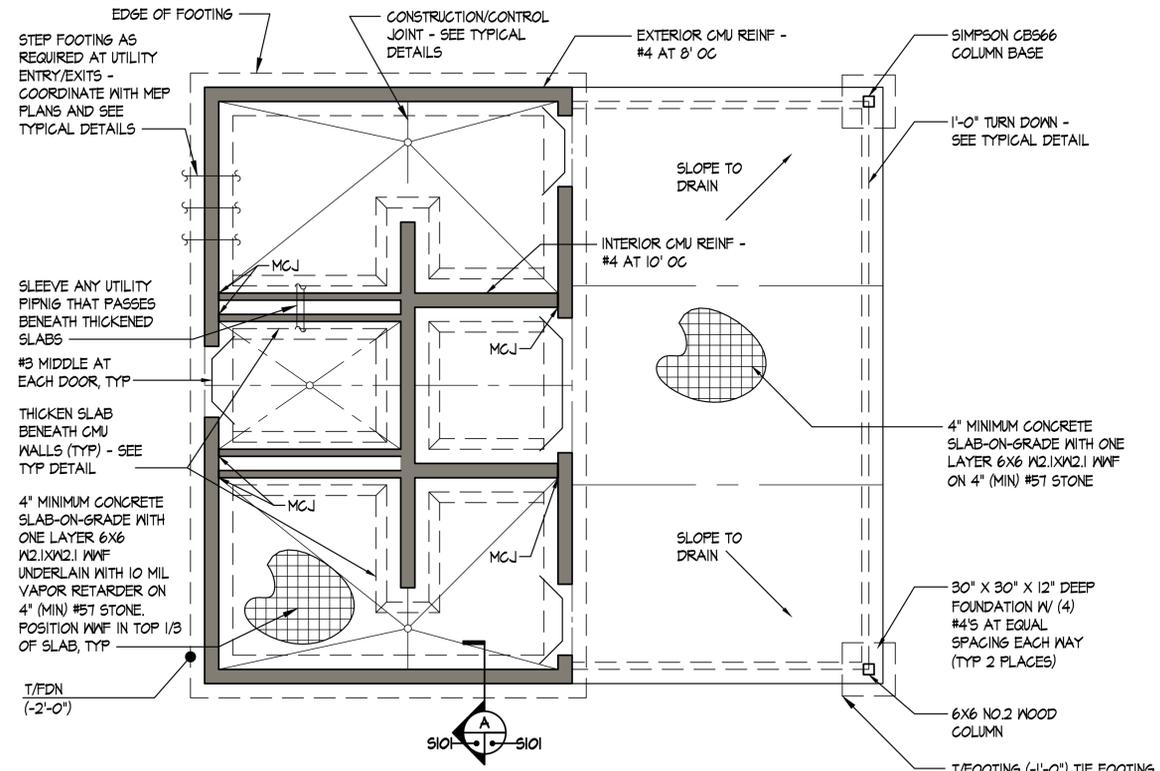
SHEET:

S002

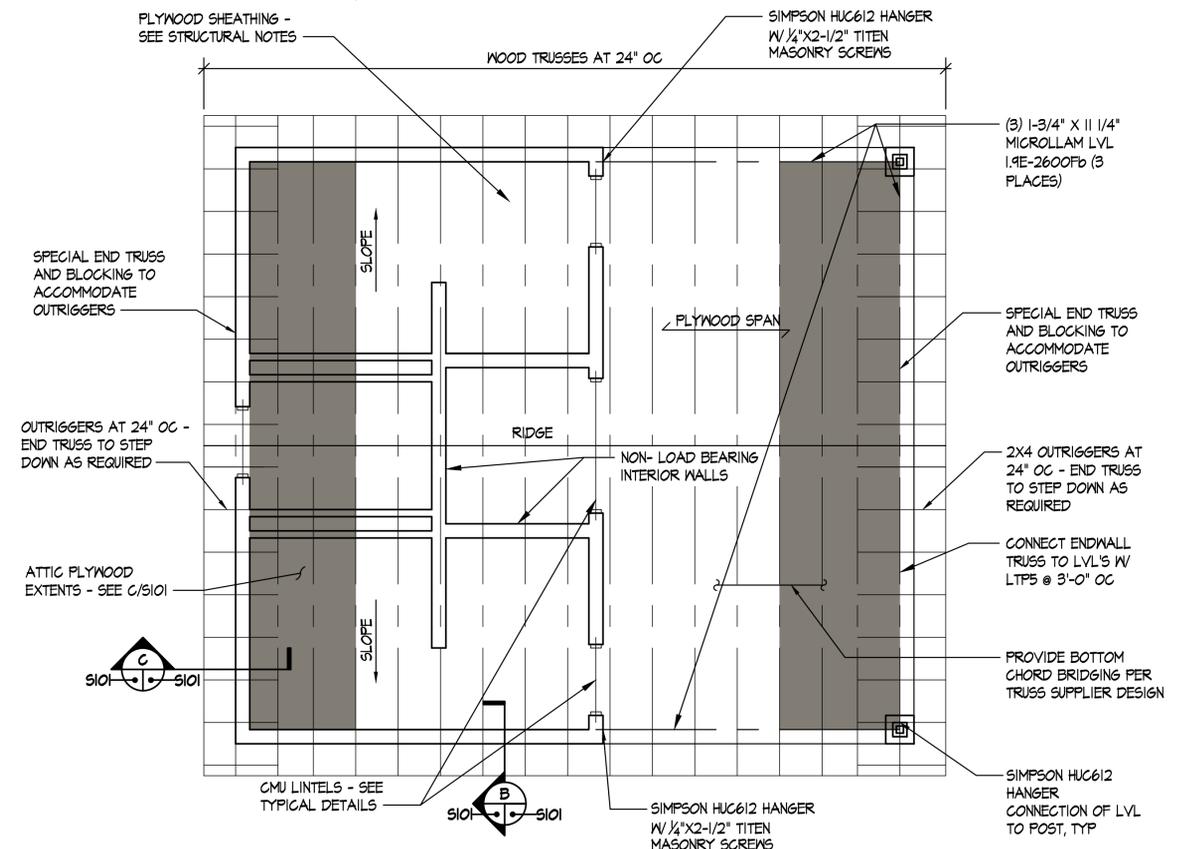
PROSIM
ENGINEERING, LLC

3165 FOREST DRIVE, SUITE 3 158 SOUTH IRON STREET,
GRAY, TENNESSEE 37815 BRANSON, VIRGINIA 24314
423.977.8314 423.782.9972

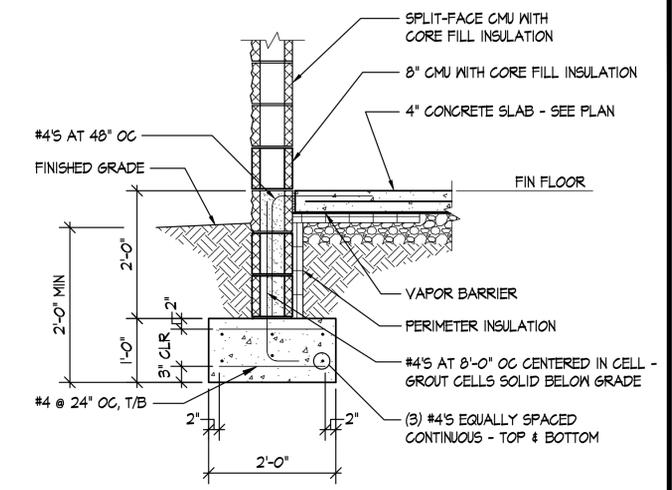
THE LANE GROUP © 2015



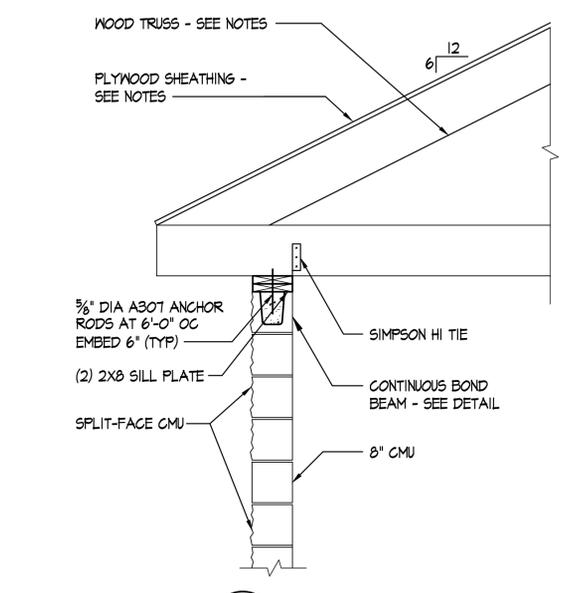
FOUNDATION PLAN
SCALE: 1/4" = 1'-0"



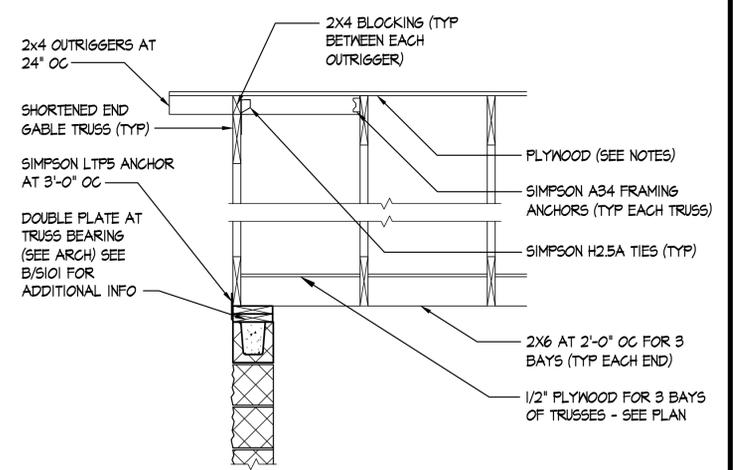
ROOF FRAMING PLAN
SCALE: 1/4" = 1'-0"



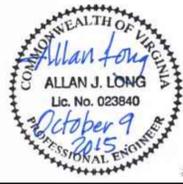
A
DETAIL
SCALE: 3/4" = 1'-0"



B
DETAIL
SCALE: 3/4" = 1'-0"



C
DETAIL
SCALE: 3/4" = 1'-0"

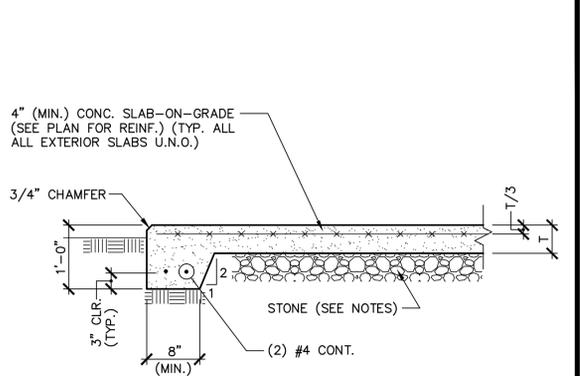
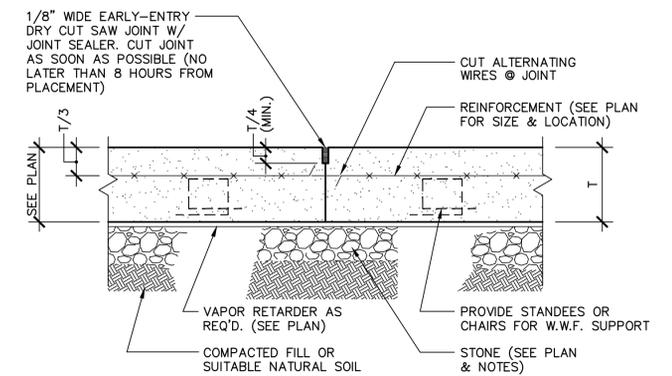
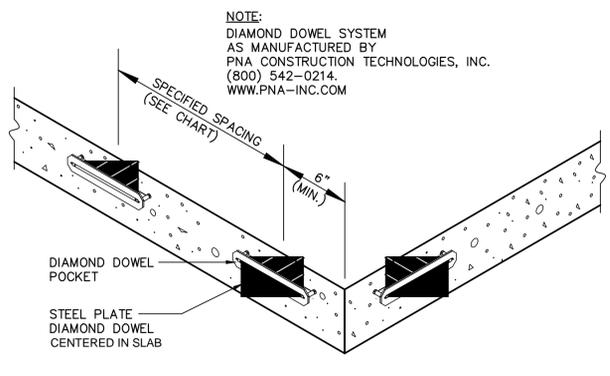
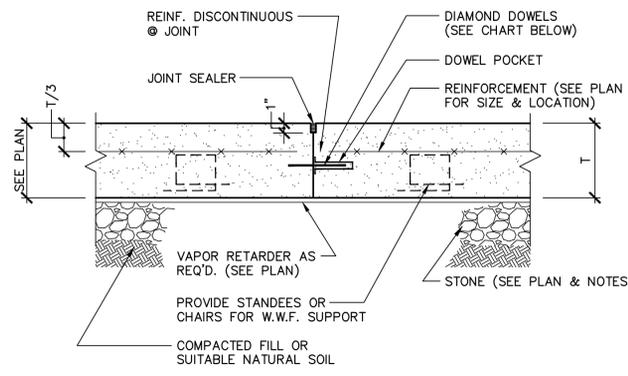


DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

S101



TYPICAL SLAB CONSTRUCTION JOINT (CSJ)

TYPICAL SLAB CONTRACTION JOINT (CTJ)

TYPICAL 12" SLAB TURN DOWN

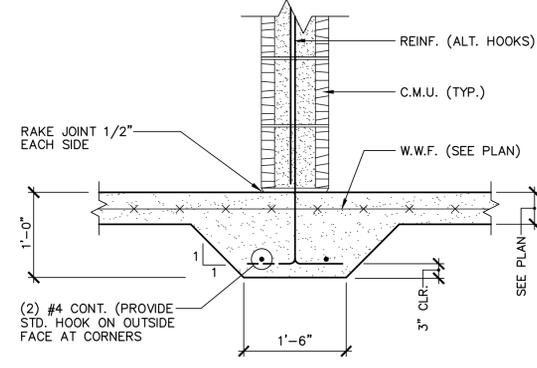
N.T.S.

DOWEL SIZE AND SPACING CHART		
SLAB THICKNESS (IN.) (T)	DIAMOND DOWEL DIMENSIONS (IN.)	DOWEL SPACING C/C (IN.)
4-6	1/4 x 4 1/2 x 4 1/2	18
7-8	3/8 x 4 1/2 x 4 1/2	18
9-11	3/4 x 4 1/2 x 4 1/2	20

(COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND FINISHES FOR APPEARANCE)

N.T.S. (COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND FINISHES FOR APPEARANCE)

N.T.S. (SEE PLAN FOR LOCATION)



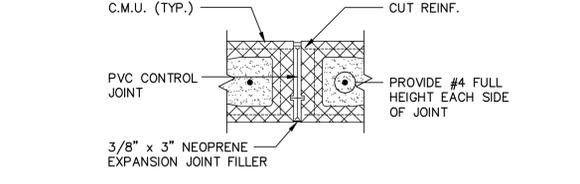
TYPICAL THICKENED SLAB DETAIL

N.T.S.

MASONRY LINTEL SCHEDULE	
SPAN	8 INCH CONCRETE MASONRY UNITS (CMU)
UP TO 5'-0"	
5'-1" TO 12'-0"	

- NOTES:
- PROVIDE 16" BEARING @ EACH END OF C.M.U. LINTELS, 8" BEARING @ EACH END OF STEEL LINTELS (INCLUDING W).
 - PROVIDE FULL BEDDING @ BEARINGS AND FOR ONE COURSE ABOVE ALL LINTELS.
 - GROUT CELLS UNDER BEARING FULL HEIGHT. SEE PLANS/ NOTES FOR REINFORCEMENT.
 - NO PENETRATIONS ARE PERMITTED WITHIN LINTEL.
 - C.M.U. LINTELS ARE TO BE SHORED UNTIL GROUT HAS REACHED 85 PERCENT OF STRENGTH.

MASONRY BOND BEAM SCHEDULE	
SINGLE	8 INCH CONCRETE MASONRY UNITS (C.M.U.)
PROVIDE WHERE SHOWN AND AT TOP OF ALL WALLS LESS THAN 12'-0" TALL	



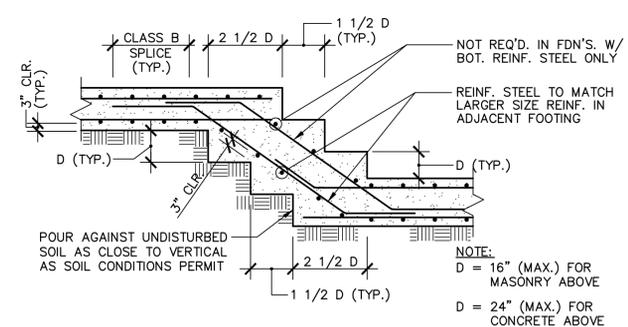
TYPICAL MASONRY CONTROL JOINT DETAIL

N.T.S. (SEE PLANS & STRUCT. NOTES)

MASONRY REINFORCEMENT LAP DIMENSIONS			
ALLOWABLE STRESS DESIGN f _s = 24,000 PSI MAX. f _y = 60,000 PSI f _m = 1500 PSI			
ASTM BAR SIZE	LAP	LDH	PERMITTED BLOCK SIZE
3	18	11	6, 8, 10, 12
4	24	15	6, 8, 10, 12
5	30	18	8, 10, 12
6	43	34	8, 10, 12
7	46	36	10, 12
8	70	59	10, 12
9	73	61	12

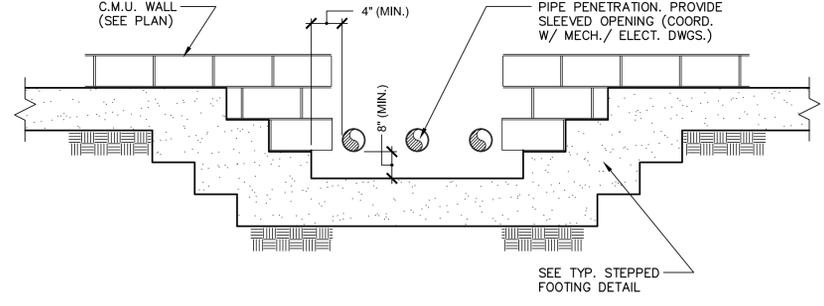
NOTES:

- WELDING OF LAPS ARE PERMITTED IN COMPLIANCE WITH ACI 530/ 530.1 AND AWS D1.4, WELDS MUST DEVELOP 1.25 x YIELD OF BAR.
- MECHANICAL SPLICES ARE PERMITTED IN COMPLIANCE WITH ACI 530/ 530.1, MECHANICAL SPLICES MUST DEVELOP 1.25 x YIELD OF BAR.
- LAPS ON EPOXY COATED BARS ARE TO BE INCREASED BY 50 PERCENT.



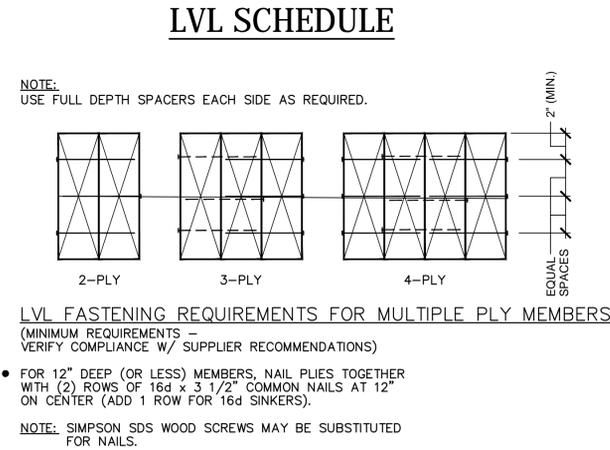
TYPICAL STEPPED FOUNDATION

N.T.S.



TYPICAL WALL SUBFLOOR PIPE PENETRATION FOOTING DETAIL

N.T.S. NOTE: UTILITY LINES ARE NOT TO BE PLACED BENEATH STRIP FOOTINGS.



NO.	REVISION

PLUMBING SPECIFICATIONS

1. GENERAL PROVISIONS

- A. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE 2012 INTERNATIONAL PLUMBING CODE INCLUDING REFERENCED CODES AND STANDARDS AND IN ACCORDANCE WITH MANDATES OF THE LOCAL BUILDING OFFICIALS.
 - B. THE GENERAL ARRANGEMENT AND LOCATIONS OF PIPING, FIXTURES, ETC. ARE INDICATED BY THE DRAWINGS AND SHALL BE INSTALLED IN ACCORDANCE THEREWITH, WITH THE EXCEPTION OF SUCH CHANGES AS MAY BE REQUIRED ON ACCOUNT OF OTHER TRADES. CONTRACTOR SHALL COORDINATE WORK WITH INSTALLATION OF OTHER SUBCONTRACTORS.
 - C. PLUMBING WORK SHALL BE COORDINATED WITH THE CONTRACTOR AS TO SCHEDULING, DIMENSIONING AND LOCATION OF EQUIPMENT.
 - D. MAJOR ITEMS ARE SHOWN ON THE PROJECT PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INCIDENTAL ITEMS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
 - E. ALL PIPING SYSTEMS SHALL TERMINATE 5 FEET BEYOND THE BUILDING LINE UNLESS INDICATED OTHERWISE. EXTENSION OF THESE LINES SHALL BE PROVIDED BY THE SITE CONTRACTOR.
 - F. SIMILAR ITEMS SHALL BE PROVIDED BY A SINGLE MANUFACTURER.
 - G. ALL REQUIRED WALL OR FLOOR OPENINGS SHALL BE COORDINATED WITH THE CONTRACTOR.
 - H. ALL PIPING SHALL BE ABOVE CEILING UNLESS INDICATED OTHERWISE.
 - I. DO NOT INSTALL PVC PIPING OR ANY COMBUSTIBLE MATERIAL IN ANY AIR PLENUM.
 - J. ALL EQUIPMENT SHALL BE WIPED CLEAN, REMOVING ALL TRACES OF OIL, DIRT, OR PAINT SPOTS.
 - K. PROVIDE SUPPORTS TO RIGIDLY ATTACH ALL EQUIPMENT, APPURTENANCES AND PIPE AS REQUIRED FOR SUPPORT. PRIOR TO INSTALLATION OF HANGERS AND INSERTS, THE CONTRACTOR SHALL COORDINATE LOCATIONS AND REQUIREMENTS TO MINIMIZE CONFLICTS WITH OTHER BUILDING SYSTEMS. INSTALLATION OF PIPE HANGERS AND SUPPORTS SHALL BE IN STRICT ACCORDANCE WITH MSS SP-58, 69 AND 89.
 - L. CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL EQUIPMENT INDICATED TO BE FURNISHED BY OTHERS.
 - M. THE CONTRACTOR SHALL INVESTIGATE THE CONSTRUCTION CONDITIONS AFFECTING THE WORK, ADJUST THE LOCATION OF EQUIPMENT, PIPING AND DUCTWORK AND PROVIDE FITTINGS AND ACCESSORIES AS REQUIRED TO MEET ACTUAL CONDITIONS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR UNANTICIPATED WORK ERUPTING FROM THE INSTALLATION OF THE NEW WORK.
 - N. PENETRATIONS THROUGH FIRE RATED PARTITIONS, WALLS AND FLOORS SHALL BE SEALED IN ACCORDANCE WITH THE TERMS OF UL LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS WHEN AS PUBLISHED IN THE UL FIRE RESISTANCE DIRECTORY. PENETRATIONS SHALL EXACTLY CONFORM TO DETAILS OF THE FIRESTOP SYSTEM INDICATED FOR THE TYPE OF PARTITION, WALL AND FLOOR CONSTRUCTION ENCOUNTERED.
2. SUBMISSION OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND PROJECT INFORMATION
- A. SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS:
 - (1) STRAINERS
 - (2) INSULATION
 - (3) GATE VALVES
 - (4) CHECK VALVES
 - B. IDENTIFY ALL PLUMBING SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WITH THE NAME OF THE PROJECT. CLEARLY MARK THE SPECIFIC ITEMS INTENDED FOR USE. SUBMIT ALL RELATED ITEMS AT ONE TIME.
 - C. PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, SUBMIT THE FOLLOWING INFORMATION FOR REVIEW AND APPROVAL.
 - (1) OPERATING AND MAINTENANCE INSTRUCTIONS.
 - (2) "AS BUILT" DRAWINGS.
3. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE AND CONTRACTOR SHALL MAKE GOOD, WITHOUT ADDITIONAL COST TO THE OWNER, ANY DEFECTS WHICH MAY APPEAR WITHIN THAT PERIOD. MANUFACTURER'S WARRANTIES EXTENDING BEYOND ONE YEAR SHALL BE PROCESSED AND TURNED OVER TO THE OWNER.
4. "AS BUILT" DRAWINGS: CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF THE LOCATION OF ALL CONCEALED PIPING, VALVES, CONTROLS, ETC., BOTH INTERIOR AND EXTERIOR. ON COMPLETION OF THE WORK, ONE PRINT EACH OF THE CONTRACT DRAWINGS WHICH ARE APPLICABLE SHALL BE NEATLY AND CLEARLY MARKED IN COLOR TO SHOW ALL VARIATIONS BETWEEN THE WORK ACTUALLY PROVIDED AND THAT INDICATED ON THE CONTRACT DRAWINGS.
5. OPERATING AND MAINTENANCE MANUALS
- A. GENERAL: PRIOR TO COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE THREE HARDBACKED LOOSELEAF RING TYPE BINDERS, IDENTIFIED WITH THE NAME OF THE PROJECT. CONTRACTOR SHALL DELIVER THESE BINDERS TO THE ENGINEER FOR REVIEW AND TRANSMITTAL TO THE OWNER.
 - B. THE FOLLOWING ITEMS AND OTHER ADDITIONAL PERTINENT DATA FOR EACH ITEM OF EQUIPMENT SHALL BE INCLUDED:
 - C. THE OPERATING AND MAINTENANCE MANUALS SHALL BE CONSIDERED A PART OF THE FINAL INSPECTION AND THEY SHALL BE SUBMITTED FOR APPROVAL AT LEAST THIRTY (30) DAYS PRIOR TO REQUEST FOR FINAL INSPECTION.
6. ACCESS DOORS: ACCESS DOORS SHALL BE PROVIDED FOR ALL CONCEALED VALVES, CONTROLS, AND ANY OTHER EQUIPMENT OR MATERIALS REQUIRING INSPECTION OR MAINTENANCE. ACCESS DOORS SHALL BE FURNISHED FOR FLOORS, WALLS AND CEILINGS, OF ADEQUATE SIZE SO THAT CONCEALED ITEMS WILL BE READILY ACCESSIBLE FOR SERVICING OR FOR REMOVAL AND REPLACEMENT IF NECESSARY.

7. IDENTIFICATION

- A. SUBMITTALS
 - (1) SUBMIT LIST OF WORDING, SYMBOLS, LETTER SIZE, AND COLOR CODING FOR MECHANICAL IDENTIFICATION.
 - (2) SUBMIT VALVE CHART AND SCHEDULE, INCLUDING VALVE TAG NUMBER, LOCATION, FUNCTION, AND VALVE MANUFACTURER'S NAME AND MODEL NUMBER.
 - (3) PRODUCT DATA: PROVIDE MANUFACTURER'S CATALOG LITERATURE FOR EACH PRODUCT REQUIRED.
 - B. NAMEPLATES
 - (1) DESCRIPTION: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED LETTERS ON LIGHT CONTRASTING BACKGROUND COLOR.
 - C. TAGS
 - (1) METAL TAGS: BRASS WITH STAMPED LETTERS; TAG SIZE MINIMUM 1-1/2 INCHES (40 MM) DIAMETER.
 - (2) CHART: TYPEWRITTEN LETTER SIZE LIST IN ANODIZED ALUMINUM FRAME.
 - D. INSTALLATION
 - (1) DEGREASE AND CLEAN SURFACES TO RECEIVE ADHESIVE FOR IDENTIFICATION MATERIALS.
 - (2) INSTALL PLASTIC NAMEPLATES WITH CORROSIVE-RESISTANT MECHANICAL FASTENERS, OR ADHESIVE. APPLY WITH SUFFICIENT ADHESIVE TO ENSURE PERMANENT ADHESION AND SEAL WITH CLEAR LAQUER.
 - (3) INSTALL TAGS WITH CORROSION RESISTANT CHAIN.
 - (4) INSTALL PLASTIC PIPE MARKERS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
 - (5) IDENTIFY CONTROL PANELS AND MAJOR CONTROL COMPONENTS OUTSIDE PANELS WITH PLASTIC NAMEPLATES.
 - (6) IDENTIFY VALVES IN MAIN AND BRANCH PIPING WITH TAGS.
 - (7) IDENTIFY PIPING, CONCEALED OR EXPOSED, WITH PLASTIC PIPE MARKERS OR STENCILLED PAINTING. IDENTIFY SERVICE, FLOW DIRECTION, AND PRESSURE. INSTALL IN CLEAR VIEW AND ALIGN WITH AXIS OF PIPING. LOCATE IDENTIFICATION NOT TO EXCEED 20 FEET (6 M) ON STRAIGHT RUNS INCLUDING RISERS AND DROPS, ADJACENT TO EACH VALVE AND TEE, AT EACH SIDE OF PENETRATION OF STRUCTURE OR ENCLOSURE, AND AT EACH OBSTRUCTION.
 - (8) PROVIDE CEILING TAGS TO LOCATE VALVES ABOVE T-BAR TYPE PANEL CEILING. LOCATE IN CORNER OF PANEL CLOSEST TO EQUIPMENT.
8. PIPING SPECIALTIES
- A. PIPE ESCUTCHEONS: INSTALL PIPE ESCUTCHEONS ON EACH PIPE PENETRATION THRU FLOORS, WALLS PARTITIONS, AND CEILINGS WHERE PENETRATION IS EXPOSED TO VIEW AND ON EXTERIOR OF BUILDING. SECURE ESCUTCHEON TO PIPE OR INSULATION SO ESCUTCHEON COVERS PENETRATION HOLE, AND IS FLUSH WITH ADJOINING SURFACE. PROVIDE SHEET STEEL ESCUTCHEONS, SOLID OR SPLIT HINGED. FOR AREAS WHERE WATER AND CONDENSATION CAN BE EXPECTED TO ACCUMULATE, PROVIDE CAST BRASS OR SHEET BRASS ESCUTCHEONS, SOLID OR SPLIT HINGED.
 - B. PIPE SLEEVES: INSTALL PIPE SLEEVES WHERE PIPING PASSES THROUGH WALLS, FLOORS, CEILINGS, AND ROOFS. DO NOT INSTALL SLEEVES THROUGH STRUCTURAL MEMBERS OF WORK, EXCEPT AS DETAILED ON DRAWINGS, OR AS REVIEWED BY ARCHITECT/ENGINEER. SIZE SLEEVES SO THAT PIPING AND INSULATION (IF ANY) WILL HAVE FREE MOVEMENT IN SLEEVE, INCLUDING ALLOWANCE FOR THERMAL EXPANSION.

9. INSULATION

- A. FLAME/SMOKE RATINGS: PROVIDE COMPOSITE PLUMBING INSULATION (INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES) WITH FLAME-SPREAD RATING OF 25 OR LESS, AND SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ANSI/ASTM E84 (NFPA 255) METHOD. INSULATION SHALL BE LABELED BY THE MANUFACTURER. THE LABEL SHALL INDICATE THE INSULATING VALUE, FLAME SPREAD AND SMOKE-DEVELOPED RATING.
- B. SUBMITTALS: SUBMIT MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS FOR EACH TYPE OF PLUMBING INSULATION. SUBMIT SCHEDULE SHOWING MANUFACTURER'S PRODUCT NUMBER, THICKNESS, AND FURNISHED ACCESSORIES FOR EACH PLUMBING SYSTEM REQUIRING INSULATION.
- C. INSTALLATION: INSULATION SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS USING ONLY ADHESIVES, MASTICS AND PLUMBING FASTENERS APPROVED BY THE INSULATION MANUFACTURER. INSULATION SHALL NOT BE APPLIED UNTIL AFTER THE EQUIPMENT HAS BEEN TESTED WITH RESULTS ACCEPTABLE TO THE ARCHITECT/ENGINEER.
- D. MATERIALS:
 - (1) CELLULAR FOAM PIPE INSULATION: TUBULAR, FLEXIBLE, FIRE RESISTANT INSULATION WITH OPERATING TEMPERATURE RANGE OF -40 DEGREES F TO 220 DEGREES F, THERMAL CONDUCTIVITY "K"=0.27 BTU-IN/HOUR-SF-DEG F AT 75 DEGREES F. NO JACKET REQUIRED. EQUAL TO ARMSTRONG ARMAFLEX AP.
- E. PIPE INSULATION
 - (1) INSULATION OMITTED: OMIT INSULATION ON EXPOSED PLUMBING FIXTURE RUNOUTS FROM FACES OF WALL OR FLOOR TO FIXTURE; ON UNIONS, FLANGES, STRAINERS, FLEXIBLE CONNECTIONS, AND EXPANSION JOINTS.
 - (2) COVER VALVES, FITTINGS AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN.

- (3) EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.
- (4) INSTALL PROTECTIVE METAL SHIELDS AND INSULATED INSERTS WHEREVER NEEDED TO PREVENT COMPRESSION OF INSULATION.
- (5) DOMESTIC COLD WATER PIPING, ABOVE GROUND: PIPING SHALL BE INSULATED WITH 1/2 INCH THICK GLASS FIBER, CELLULAR FOAM, OR POLYETHYLENE PIPE INSULATION.
- (6) DOMESTIC HOT WATER PIPING (INCLUDING HOT WATER RECIRCULATING): PIPING SHALL BE INSULATED WITH 1/2 INCH THICK GLASS FIBER, CELLULAR FOAM, OR POLYETHYLENE PIPE INSULATION. VAPOR SEAL IS NOT REQUIRED.

10. PLUMBING PIPING

- A. DOMESTIC WATER PIPING ABOVE GROUND
 - PIPE: TYPE L HARD DRAWN COPPER IN ACCORDANCE WITH ASTM B75
 - FITTINGS: CAST BRONZE OR WROUGHT COPPER ASTM B16.15
 - JOINTS: SOLDERED USING TIN-ANTIMONY (95-5) SOLDER
- B. DOMESTIC WATER PIPING UNDERGROUND
 - PIPE: TYPE K SEAMLESS ROLL STOCK IN ACCORDANCE WITH ASTM B88
 - FITTINGS: CAST BRONZE OR WROUGHT COPPER ASTM B16.15
 - JOINTS: SOLDERED USING TIN-ANTIMONY (95-5) SOLDER
- C. SOIL, WASTE AND VENT PIPING BELOW GRADE AND STORM SEWER BELOW GRADE
 - SIZE: 4 INCHES AND SMALLER
 - PIPE: SERVICE WEIGHT CAST IRON ASTM A-74
 - FITTINGS: SERVICE WEIGHT, BELL AND SPIGOT CAST IRON
 - JOINTS: BELL AND SPIGOT FOR CAST IRON
- D. SOIL, WASTE AND VENT PIPING ABOVE GRADE AND STORM DRAINS & ROOF LEADERS
 - SIZE: 3 INCHES AND LARGER
 - PIPE: SERVICE WEIGHT CAST IRON ASTM A-74 OR HUBLESS ASTM C-564
 - FITTINGS: SERVICE WEIGHT OR HUBLESS CAST IRON
 - JOINTS: HUB & SPIGOT CAULKED, COMPRESSION GASKETS OR NEOPRENE SLEEVES AND STAINLESS STEEL BANDS FOR CAST IRON
 - SIZE: 2-1/2 INCHES AND SMALLER: SAME AS 3 INCHES AND LARGER EXCEPT VENTS MAY BE SCH. 40 GALVANIZED STEEL ASTM A120/A53 WITH GALVANIZED CAST IRON OR MALLEABLE IRON FITTINGS.
- E. ALL PIPE OF THE SAME SIZE SHALL BE THE SAME MATERIAL.

11. PLUMBING VALVES

- A. PROVIDE THREADED SHUT-OFF VALVE AND UNION OR EQUIVALENT AT EACH HOT AND COLD WATER EQUIPMENT CONNECTION. PROVIDE THREADED SHUT-OFF VALVE ON EACH BRANCH OR RISER THAT SERVES TWO OR MORE PLUMBING FIXTURES.
- B. GATE VALVES 2-1/2 INCHES AND SMALLER: ALL BRONZE, RISING STEM, SOLID WEDGE DISC. STOCKHAM B-100 OR B-108.
- C. CHECK VALVES IN HORIZONTAL PIPES:
 - (1) 2 INCHES AND SMALLER: ALL BRONZE, REGRINDING BRONZE DISC, HORIZONTAL SWING, Y-PATTERN. STOCKHAM B-319OR B-309.
- D. BALL VALVES MAY BE USED IN LIEU OF GATE VALVES 2 INCHES AND SMALLER. BALL VALVES SHALL HAVE BRONZE BODY, BRONZE BALL AND TFE SEATS AND SEALS. STOCKHAM S-216BRRT OR S-216BRRS.

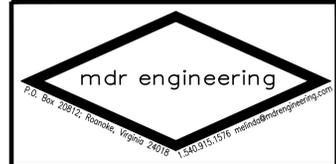
12. PLUMBING FIXTURES

- A. CODES AND STANDARDS: COMPLY WITH APPLICABLE PORTIONS OF NATIONAL STANDARD PLUMBING CODE PERTAINING TO MATERIALS AND INSTALLATION OF PLUMBING FIXTURES.
 - (1) ANSI STANDARDS: COMPLY WITH APPLICABLE ANSI STANDARDS PERTAINING TO PLUMBING FIXTURES AND SYSTEMS.
 - (2) PDI COMPLIANCE: COMPLY WITH STANDARDS ESTABLISHED BY PDI PERTAINING TO PLUMBING FIXTURE SUPPORTS.
 - (3) UL COMPLIANCE: CONSTRUCT WATER COOLERS IN ACCORDANCE WITH UL STANDARD 399 "DRINKING-WATER COOLERS", AND PROVIDE UL-LISTING AND LABEL.
 - (4) ANSI COMPLIANCE: CONSTRUCT AND INSTALL BARRIER FREE PLUMBING FIXTURES IN ACCORDANCE WITH ANSI STANDARD A117.1 "SPECIFICATIONS FOR MAKING BUILDINGS AND FACILITIES ACCESSIBLE TO AND USABLE BY PHYSICALLY HANDICAPPED PEOPLE".
- B. ALL EXPOSED FIXTURE SUPPLIES AND WASTE LINES SHALL BE CHROME PLATED.
- C. PLUMBING FIXTURES SHALL BE POSITIVELY VENTED AND TRAPPED IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE. WET VENTING IS ALLOWED IF WASTE PIPING IS OVERSIZED AND IN ACCORDANCE WITH CODE PROVISIONS. LOCATION OF VENT SHALL NOT EXCEED MAXIMUM DISTANCES TO THE TRAP AS ESTABLISHED WITHIN THE INTERNATIONAL PLUMBING CODE.

13. CLEANING AND TESTING

- A. ALL WATER PIPING, VALVES, ETC. SHALL BE THOROUGHLY FLUSHED OF FOREIGN MATTER AND TESTED FOR LEAKS FOR A PERIOD OF TWO HOURS AT NOT LESS THAN 25 PSIG. ANY LEAKAGE SHALL BE REPAIRED. DISINFECT DOMESTIC WATER PIPING INCLUDING WATER SERVICE PIPING IN ACCORDANCE WITH AWWA C601.
- B. ALL DRAIN, WASTE AND VENT PIPING SHALL BE TESTED FOR LEAKS BY FILLING PIPING SYSTEM TO OVERFLOW AND ALLOWING TO STAND FOR 24 HOURS. NO VISIBLE DROP IN WATER LEVEL WILL BE ACCEPTABLE.

END OF SPECIFICATIONS



THE LANE GROUP
119 N. MAIN STREET
GALAX, VA 24833 | 276.236.4688
BIG STONE GAP, VA | ABINGDON, VA | GALAX, VA



GRAYSON COUNTY
RESTROOM BUILDING
INDEPENDENCE, VIRGINIA

PLUMBING
SPECIFICATIONS

DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

P-101

TLG PROJECT #13013

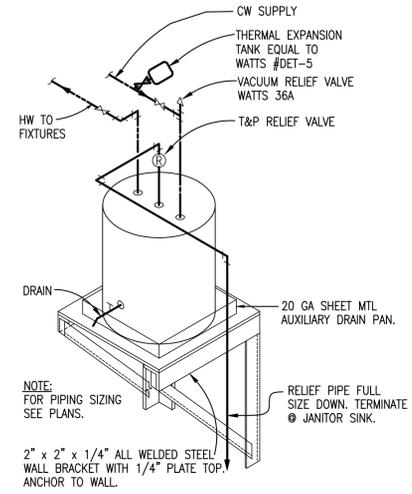
THE LANE GROUP © 2015

LEGEND

	BRANCH CONNECTION - BOTTOM OF MAIN
	BRANCH CONNECTION - SIDE OF MAIN
	BRANCH CONNECTION - TOP OF MAIN
	PIPE DOWN OR PIPE FROM BELOW
	PIPE UP OR PIPE FROM ABOVE
	DIRECTION OF FLOW
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	SPRINKLER HEAD
	SANITARY SEWER OR DRAIN
	SANITARY VENT
	RAIN LEADER ABOVE LOWEST FLOOR
	STORM SEWER OR DRAIN
	CLEANOUT FLUSH WITH FLOOR
	CLEANOUT BELOW FLOOR
	HOSE BIBBS (PLAN & ELEVATION)
	GATE VALVE
	BALL VALVE
	THERMOMETER
	PRESSURE REDUCING VALVE (PRV)
	RELIEF VALVE
	BACKFLOW PREVENTER (BFP)
	CONNECT TO EXISTING
	SPRINKLER HEAD

ABBREVIATIONS

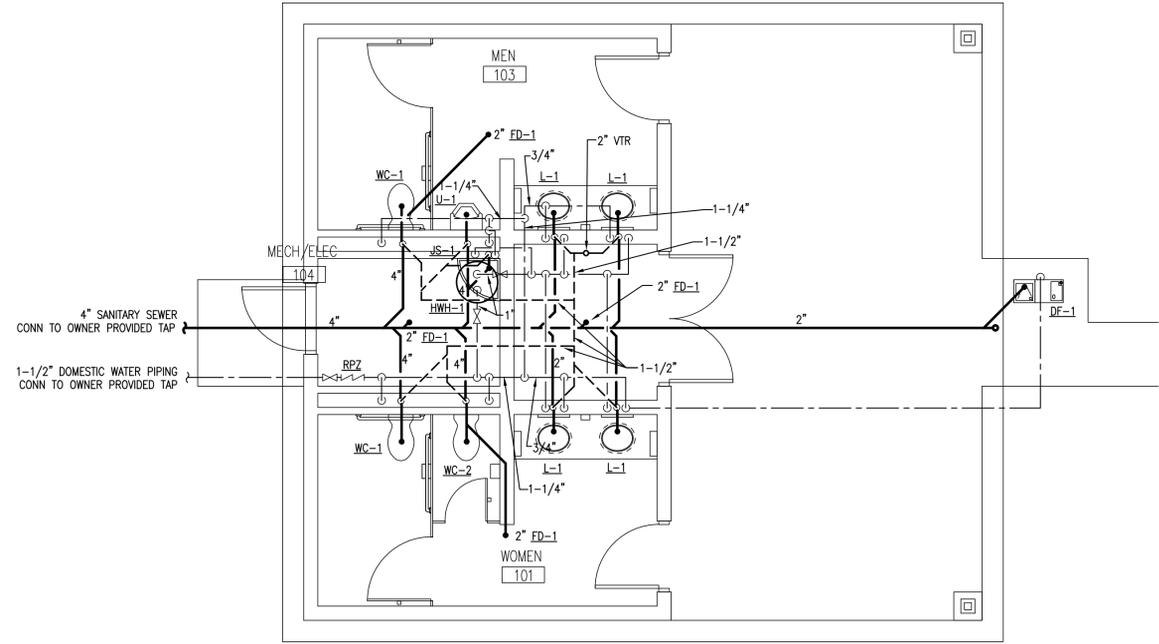
ABV	ABOVE
BTU	BRITISH THERMAL UNIT
BEL	BELOW
BET	BETWEEN
CLG	CEILING
CO	CLEANOUT
CONC	CONCRETE
CONN	CONNECT, CONNECTION
CW	COLD WATER
CONT	CONTINUED
DN	DOWN
EA	EACH
EWC	ELECTRIC WATER COOLER
F	DEGREES FARENHEIT
FD	FLOOR DRAIN
FL	FLOOR
FR	FROM
FT	FEET
GPM	GALLONS PER MINUTE
GV	GATE VALVE
HB	HOSE BIBB
HW	HOT WATER
IN	INCH, INCHES
MAX	MAXIMUM
MIN	MINIMUM
RD	ROOF DRAIN
REQD	REQUIRED
RL	ROOF LEADER
SH	SHEET
TEMP	TEMPERATURE
TYP	TYPICAL
V	SANITARY VENT
VTR	VENT THRU ROOF
W	SANITARY WASTE
WH	WALL HYDRANT



DETAIL - WATER HEATER
NO SCALE

PLUMBING EQUIPMENT SCHEDULE

WC-1	COMMERCIAL WALL-MOUNTED TOILET WITH FLUSH VALVE; INLET WITH SEAT AND CERAMIC GLAZE, ADA COMPLIANT, WHITE, ELONGATED FRONT BOWL, WITH POLISHED CHROME TRIP LEVER AND PRESSURE ASSIST TECHNOLOGY, 1.6 GPF
WC-2	COMMERCIAL WALL-MOUNTED TOILET WITH FLUSH VALVE; INLET WITH SEAT AND CERAMIC GLAZE, WHITE, ELONGATED FRONT BOWL, WITH POLISHED CHROME TRIP LEVER AND PRESSURE ASSIST TECHNOLOGY, 1.6 GPF
U-1	COMMERCIAL WALL-MOUNTED URINAL WITH 3/4" TOP SPUD, ADA COMPLIANT, STAINLESS STEEL DRAIN COVER, CONCEALED INTEGRAL TRAP, WHITE, WITH HYDROPOWER, SELF-GENERATING ELECTRONIC FLUSH VALVE, POLISHED CHROME, MANUAL OVERRIDE BUTTON, 12 HOUR AUTOMATIC AUTOMATIC FLUSH, VACUUM BREAKER & ANGLE STOP SET, 0.5 GPF
L-1	CAST IRON UNDERMOUNT SINK, 18"x11" INSIDE BOWL DIMENSIONS, 8" DEEP, ADA COMPLIANT, DRAIN OPENING AND OVERFLOW. FAUCET TO BE SELF-GENERATING, AUTOMATIC INFRARED SENSOR, ANTI-SCALD THERMOSTATIC MIXING, TEN SECOND DISCHARGE, SENSOR TO BE MOUNTED UNDER SINK AS HIGH AS POSSIBLE; PROVIDE WITH GRID DRAIN STRAINER AND P-TRAP.
JS-1	MOLDED STONE CORNER MOUNT MOP SERVICE BASIN, 24"x24"x10"; WITH WALL MOUNTED FAUCET W/VACUUM BREAKER & BUCKET HOOK; HOSE AND BRACKET, VINYL BUMPER GUARD, MOP HANGAR AND QUICK DRAIN CONNECTOR.
DF-1	PEDESTAL STEEL FOUNTAIN WITH POWDER COAT FINISH AND CORROSION PROTECTION. COUNTOUR FORMED, STAINLESS STEEL BASIN, ADA COMPLIANT, FREEZE RESISTANT VALVE SYSTEM, BUBBLER, PUSHBUTTON MECHANISM, VANDAL RESISTANT.
FD-1	CAST IRON FLOOR DRAIN, 2", ADJUSTABLE NICKEL HEAD AND HEEL=PROOF GRATE, VANDAL-PROOF; PROVIDE WITH TRAP GUARD.
RPZ	WATTS #909 REDUCED PRESSURE ZONE BACKFLOW PREVENTOR, BRONZE CONSTRUCTION, EPOXY COATED CAST IRON CHECK VALVE BODY WITH BRONZE SEATS, FDA APPROVED EPOXY COATED CAST IRON RELIEF VALVE WITH TRIM.
HWH-1	STATE ES6-40-DORS ELECTRIC WATER HEATER, SINGLE ELEMENT, 38 GAL. CAPACITY TANK, 21 GAL/HR RECOVERY AT 40 DEG. F. AND 90 DEG.F. RISE, 4500 W; 208/1; T&P RELIEF VALVE.



PLUMBING FLOOR PLAN
SCALE: 1/4" = 1'-0"



PLUMBING FIXTURE INSTALLATION SCHEDULE

FIXTURE	MARK	MH	CW	HW	VENT	WASTE
WATER CLOSET	WC-1	17"	1"	--	2"	4"
WATER CLOSET	WC-2	15"	1"	--	2"	4"
LAVATORY	L-1	UNDERMOUNT	1/2"	1/2"	1-1/2"	2"
URINAL (HC)	U-1	17"	3/4"	--	1-1/2"	2"
JANITOR'S SINK	JS-1	FLOOR	1/2"	1/2"	1-1/2"	2"

- ### NOTES
1. SIZE GIVEN ARE FOR FIXTURE ONLY. EXCEPTIONS, IF ANY, ARE SHOWN ON PLANS.
 2. MOUNTING HEIGHT DIMENSIONS ARE TO FLOOD LEVEL RIM OF FIXTURE, UNLESS NOTED OTHERWISE.

THE LANE GROUP
119 N. MAIN STREET
GALAX, VA 24833 | 276.236.4588
BIG STONE GAP, VA | ABINGDON, VA | GALAX, VA



**GRAYSON COUNTY
RESTROOM BUILDING**
INDEPENDENCE, VIRGINIA

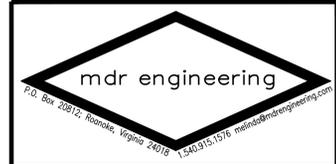
**PLUMBING
LEGEND,
FLOOR PLAN,
AND
SCHEDULES**

DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:
P-201
TLG PROJECT #13013

THE LANE GROUP © 2015



MECHANICAL SPECIFICATIONS

1. GENERAL PROVISIONS
 - A. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE 2012 INTERNATIONAL MECHANICAL CODE INCLUDING REFERENCED CODES AND STANDARDS AND IN ACCORDANCE WITH MANDATES OF THE LOCAL BUILDING OFFICIALS.
 - B. THE GENERAL ARRANGEMENT AND LOCATIONS OF DUCTWORK, PIPING, FIXTURES, ETC. ARE INDICATED BY THE DRAWINGS AND SHALL BE INSTALLED IN ACCORDANCE THEREWITH; WITH THE EXCEPTION OF SUCH CHANGES AS MAY BE REQUIRED ON ACCOUNT OF OTHER TRADES. CONTRACTOR SHALL COORDINATE WORK WITH INSTALLATION OF OTHER SUBCONTRACTORS.
 - C. MECHANICAL WORK SHALL BE COORDINATED WITH THE CONTRACTOR AS TO SCHEDULING, DIMENSIONING AND LOCATION OF EQUIPMENT.
 - D. MAJOR ITEMS ARE SHOWN ON THE PROJECT PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INCIDENTAL ITEMS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
 - E. TRADE NAMES AND CATALOG NUMBERS SHALL BE INTERPRETED AS ESTABLISHING A GENERAL DESIGN AND STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. UNLESS STATED OTHERWISE, THE CONTRACTOR MAY USE ANY ARTICLE WHICH, IN HIS JUDGEMENT, AND WITH WRITTEN COMMENT FROM THE ARCHITECT/ENGINEER INDICATING NO OBJECTION, IS EQUAL OR SUPERIOR TO THAT SPECIFIED. DRAWINGS SHOWING CHANGES OR REVISIONS REQUIRED BY THE SUBSTITUTION FOR SPECIFIED ITEMS SHALL BE SUBMITTED WITH THE SHOP DRAWING DATA, AND THE COSTS OF ALL SUCH CHANGES SHALL BE BORNE BY THE CONTRACTOR.
 - F. SIMILAR ITEMS SHALL BE PROVIDED BY A SINGLE MANUFACTURER.
 - G. ALL REQUIRED WALL OR FLOOR OPENINGS SHALL BE COORDINATED WITH THE CONTRACTOR.
 - H. ALL PIPING SHALL BE ABOVE CEILING UNLESS INDICATED OTHERWISE.
 - I. DO NOT INSTALL PVC PIPING OR ANY COMBUSTIBLE MATERIAL IN ANY AIR PLENUM.
 - J. ALL EQUIPMENT SHALL BE WIPED CLEAN, REMOVING ALL TRACES OF OIL, DIRT, OR PAINT SPOTS.
 - K. PROVIDE SUPPORTS TO RIGIDLY ATTACH ALL EQUIPMENT. APPURTENANCES AND PIPE AS REQUIRED FOR SUPPORT. PRIOR TO INSTALLATION OF HANGERS AND INSERTS, THE CONTRACTOR SHALL COORDINATE LOCATIONS AND REQUIREMENTS TO MINIMIZE CONFLICTS WITH OTHER BUILDING SYSTEMS. INSTALLATION OF PIPE HANGERS AND SUPPORTS SHALL BE IN STRICT ACCORDANCE WITH MSS SP-58, 69 AND 89.
 - L. CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL EQUIPMENT INDICATED TO BE FURNISHED BY OTHERS.
 - M. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE AND CONTRACTOR SHALL MAKE GOOD, WITHOUT ADDITIONAL COST TO THE OWNER, ANY DEFECT WHICH MAY APPEAR WITHIN THAT PERIOD. MANUFACTURER'S WARRANTIES EXTENDING BEYOND ONE YEAR SHALL BE PROCESSED AND TURNED OVER TO THE OWNER.
 - N. THE CONTRACTOR SHALL INVESTIGATE THE CONSTRUCTION CONDITIONS AFFECTING THE WORK, ADJUST THE LOCATION OF EQUIPMENT, PIPING AND DUCTWORK AND PROVIDE FITTINGS AND ACCESSORIES AS REQUIRED TO MEET ACTUAL CONDITIONS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR UNANTICIPATED WORK ERUPTING FROM THE INSTALLATION OF THE NEW WORK.
 - O. PENETRATIONS THROUGH FIRE RATED PARTITIONS, WALLS AND FLOORS SHALL BE SEALED IN ACCORDANCE WITH THE TERMS OF UL LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS WHEN AS PUBLISHED IN THE UL FIRE RESISTANCE DIRECTORY. PENETRATIONS SHALL EXACTLY CONFORM TO DETAILS OF THE FIRESTOP SYSTEM INDICATED FOR THE TYPE OF PARTITION, WALL AND FLOOR CONSTRUCTION ENCOUNTERED.
2. SUBMISSION OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND PROJECT INFORMATION
 - A. SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS:
 - (1) ALL MECHANICAL EQUIPMENT
 - B. IDENTIFY ALL MECHANICAL SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WITH THE NAME OF THE PROJECT. CLEARLY MARK THE SPECIFIC ITEMS INTENDED FOR USE. SUBMIT ALL RELATED ITEMS AT ONE TIME.
 - C. PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, SUBMIT THE FOLLOWING INFORMATION FOR REVIEW AND APPROVAL.
 - (1) OPERATING AND MAINTENANCE INSTRUCTIONS.
 - (2) "AS BUILT" DRAWINGS.
3. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE AND CONTRACTOR SHALL MAKE GOOD, WITHOUT ADDITIONAL COST TO THE OWNER, ANY DEFECTS WHICH MAY APPEAR WITHIN THAT PERIOD. MANUFACTURER'S WARRANTIES EXTENDING BEYOND ONE YEAR SHALL BE PROCESSED AND TURNED OVER TO THE OWNER.
4. "AS BUILT" DRAWINGS: CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF THE LOCATION OF ALL CONCEALED DUCTWORK, PIPING, VALVES, CONTROLS, ETC., BOTH INTERIOR AND EXTERIOR. ON COMPLETION OF THE WORK, ONE PRINT EACH OF THE CONTRACT DRAWINGS WHICH ARE APPLICABLE SHALL BE NEATLY AND CLEARLY MARKED IN RED COLOR TO SHOW ALL VARIATIONS BETWEEN THE WORK ACTUALLY PROVIDED AND THAT INDICATED ON THE CONTRACT DRAWINGS. CONTRACTOR MARK-UPS SHALL BE ON THE CONTRACT DRAWINGS WITH THE BUILDING OFFICIAL'S STAMP.
5. OPERATING AND MAINTENANCE MANUALS
 - A. GENERAL: PRIOR TO COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE THREE HARDBACKED LOOSELEAF RING TYPE BINDERS, IDENTIFIED WITH THE NAME OF THE PROJECT. CONTRACTOR SHALL DELIVER THESE BINDERS TO THE ENGINEER FOR REVIEW AND TRANSMITTAL TO THE OWNER.
 - (1) NAME OF MANUFACTURER.
 - (2) NAME, ADDRESS AND TELEPHONE NUMBER OF NEAREST MANUFACTURER'S REPRESENTATIVE.
 - (3) COPY OF LATEST APPROVED SHOP DRAWING.
 - (4) MANUFACTURER'S OPERATING AND MAINTENANCE MANUAL INCLUDING LUBRICATION DATA.
 - (5) PARTS NUMBERS FOR ALL REPLACEABLE ITEMS.
 - (6) SERIAL NUMBERS OF ALL PRINCIPAL ITEMS OF EQUIPMENT.
 - (7) CONTROL DIAGRAMS AND SEQUENCE OF OPERATION.
 - (8) MANUFACTURER'S WRITTEN WARRANTIES THAT EXTEND BEYOND THE CONTRACTOR'S ONE YEAR GUARANTEE.
 - B. THE FOLLOWING ITEMS AND OTHER ADDITIONAL PERTINENT DATA FOR EACH ITEM OF EQUIPMENT SHALL BE INCLUDED:
 - (1) NAME OF MANUFACTURER.
 - (2) NAME, ADDRESS AND TELEPHONE NUMBER OF NEAREST MANUFACTURER'S REPRESENTATIVE.
 - (3) COPY OF LATEST APPROVED SHOP DRAWING.
 - (4) MANUFACTURER'S OPERATING AND MAINTENANCE MANUAL INCLUDING LUBRICATION DATA.
 - (5) PARTS NUMBERS FOR ALL REPLACEABLE ITEMS.
 - (6) SERIAL NUMBERS OF ALL PRINCIPAL ITEMS OF EQUIPMENT.
 - (7) CONTROL DIAGRAMS AND SEQUENCE OF OPERATION.
 - (8) MANUFACTURER'S WRITTEN WARRANTIES THAT EXTEND BEYOND THE CONTRACTOR'S ONE YEAR GUARANTEE.
 - C. THE OPERATING AND MAINTENANCE MANUALS SHALL BE CONSIDERED A PART OF THE FINAL INSPECTION AND THEY SHALL BE SUBMITTED FOR APPROVAL AT LEAST THIRTY (30) DAYS PRIOR TO REQUEST FOR FINAL INSPECTION.
6. ACCESS DOORS: ACCESS DOORS SHALL BE PROVIDED FOR ALL CONCEALED VALVES, CONTROLS, AND ANY OTHER EQUIPMENT OR MATERIALS REQUIRING INSPECTION OR MAINTENANCE. ACCESS DOORS SHALL BE FURNISHED FOR FLOORS, WALLS AND CEILINGS, OF ADEQUATE SIZE SO THAT CONCEALED ITEMS WILL BE READILY ACCESSIBLE FOR SERVICING OR FOR REMOVAL AND REPLACEMENT IF NECESSARY.
7. PAINTING
 - A. SCOPE OF WORK: MECHANICAL EQUIPMENT, MATERIALS, AND RELATED PIPING DO NOT REQUIRE PAINTING EXCEPT AS INDICATED BELOW.
 - B. EQUIPMENT WITH A FACTORY APPLIED FINISH WILL NOT REQUIRE ADDITIONAL PAINTING EXCEPT TOUCH-UP WITH MATCHING FINISH WHERE IT IS DAMAGED.
 - C. PIPING, FABRICATED SUPPORTS, OR OTHER UNFINISHED AND UNPROTECTED MATERIALS LOCATED OUTDOORS SHALL BE PAINTED WITH A SUITABLE PRIMER AND COMPATIBLE FINISH PAINT. COLOR SHALL BE AS DIRECTED BY ENGINEER.
 - D. PAINT INSIDE OF DUCTWORK WITH MATTE BLACK PAINT WHERE VISIBLE BEHIND AIR INLETS AND OUTLETS.
 - E. PROTECTION OF WORK: PAINTING SHALL BE DONE WITH ALL POSSIBLE CARE TO PROTECT THIS WORK AND WORK OF OTHER TRADES. ALL DAMAGE TO THIS AND OTHER WORK CAUSED BY THE PAINTING OPERATIONS SHALL BE CORRECTED, CLEANED OR REPAIRED AS REQUIRED. HARDWARE, SPECIAL CONTROL ITEMS, GAUGES, THERMOMETERS, NAMEPLATES, INSTRUMENT GLASS AND OTHER SIMILAR ITEMS SHALL BE REMOVED OR PROPERLY PROTECTED DURING THE PAINTING OPERATIONS TO INSURE THAT THESE ITEMS ARE NOT COVERED OR SPLATTERED WITH PAINT.
8. IDENTIFICATION
 - A. SUBMITTALS
 - (1) SUBMIT LIST OF WORDING, SYMBOLS, LETTER SIZE, AND COLOR CODING FOR MECHANICAL IDENTIFICATION.
 - (2) SUBMIT VALVE CHART AND SCHEDULE, INCLUDING VALVE TAG NUMBER, LOCATION, FUNCTION, AND VALVE MANUFACTURER'S NAME AND MODEL NUMBER.
 - (3) PRODUCT DATA: PROVIDE MANUFACTURER'S CATALOG LITERATURE FOR EACH PRODUCT REQUIRED.
 - B. NAMEPLATES
 - (1) DESCRIPTION: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED LETTERS ON LIGHT CONTRASTING BACKGROUND COLOR.
 - C. TAGS
 - (1) METAL TAGS: BRASS WITH STAMPED LETTERS; TAG SIZE MINIMUM 1-1/2 INCHES (40 MM) DIAMETER.
 - (2) CHART: TYPEWRITTEN LETTER SIZE LIST IN ANODIZED ALUMINUM FRAME.
 - D. STENCILS
 - (1) STENCILS: WITH CLEAN CUT SYMBOLS AND LETTERS OF FOLLOWING SIZE:
 - (A) 3/4 TO 1-1/4 INCHES (20-30 MM) OUTSIDE DIAMETER OF INSULATION OR PIPE: 8 INCHES (200 MM) LONG COLOR FIELD, 1/2 INCHES (15 MM) HIGH LETTERS.
9. DUCTWORK
 - A. GALVANIZED STEEL DUCTS: ASTM A653/A653M GALVANIZED STEEL SHEET, LOCK-FORMING QUALITY, HAVING G60 ZINC COATING IN CONFORMANCE WITH ASTM A90/90M.
 - B. FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
 - C. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15° DIVERGENCE WHEREVER POSSIBLE; MAXIMUM 30° DIVERGENCE UPSTREAM OF EQUIPMENT AND 45° CONVERGENCE DOWNSTREAM.
 - D. FLEXIBLE DUCTS: UL LABELED, BLACK POLYMER FILM SUPPORTED BY HELICAL WOUND SPRING STEEL WIRE. THE PRESSURE RATING SHALL BE 4" WG POSITIVE AND 0.5" WG NEGATIVE. THE MAXIMUM VELOCITY SHALL BE 4000 FPM AND THE TEMPERATURE RANGE SHALL BE -20°F TO 175°F.
 - E. VOLUME CONTROL DAMPERS SHALL BE RUSKIN MODEL MD-35 AND SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
10. CLEANING AND TESTING
 - A. CLEAN EQUIPMENT AND FIXTURES TO A SANITARY CONDITION WITH CLEANING MATERIALS APPROPRIATE TO THE SURFACE AND MATERIAL BEING CLEANED. THOROUGHLY CLEAN AND SEAL AIRTIGHT ALL EXHAUST DUCTWORK LOCATED IN THE RENOVATED SPACES.
 - B. EXHAUST SYSTEMS SHALL TESTED, ADJUSTED AND BALANCED (TAB) TO VERIFY PROPER CODE REQUIRED AIRFLOWS FROM EACH RENOVATED TOILET SPACE. EXISTING VOLUME DAMPERS WHERE PRESENT SHALL BE ADJUSTED TO DELIVER +/- 10% OF DESIGN. WHERE VOLUME DAMPERS ARE NOT PRESENT, DAMPERS SHALL BE ADDED TO ACHIEVE BALANCING TO LISTED AIRFLOW.

THE LANE GROUP

119 N. MAIN STREET
GALAX, VA 24833 | 276.236.4588

BIG STONE GAP, VA | ABINGDON, VA | GALAX, VA



GRAYSON COUNTY
RESTROOM BUILDING

INDEPENDENCE, VIRGINIA

MECHANICAL
SPECIFICATIONS

DATE: OCTOBER 9, 2015

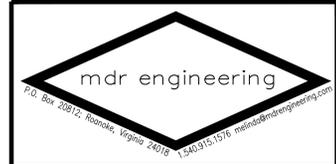
NO.	REVISION

SHEET:

M-101

TLG PROJECT #13013

THE LANE GROUP © 2015





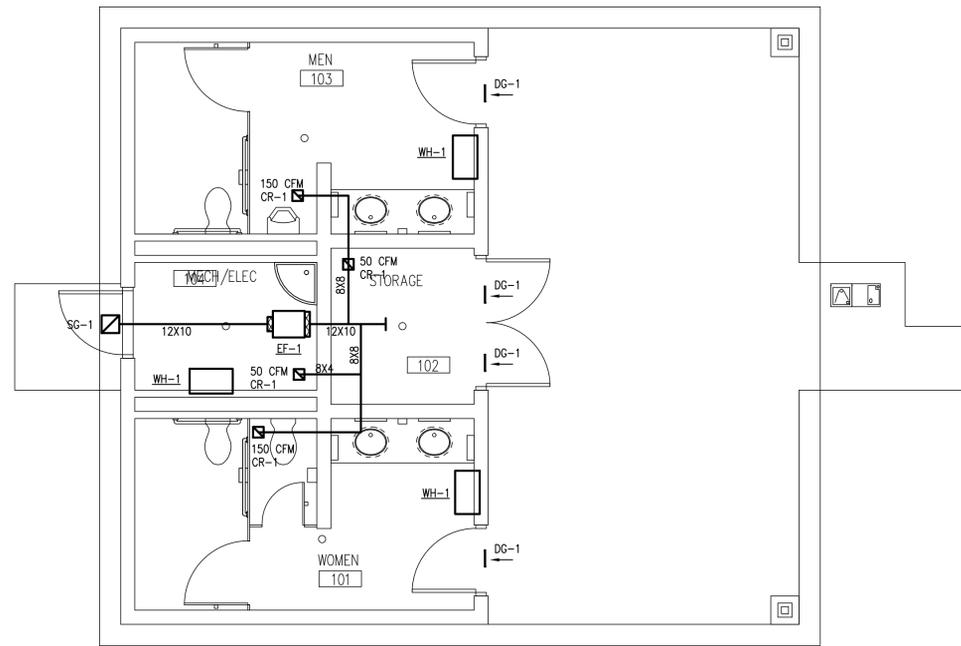
DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

M-201

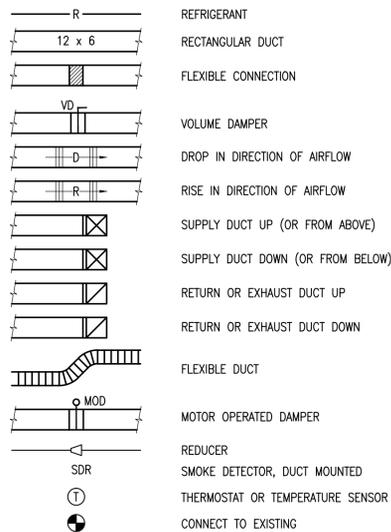
TLG PROJECT #13013



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



LEGEND



ABBREVIATIONS

BTU	BRITISH THERMAL UNIT
CD	CEILING DIFFUSER
CFD	CEILING FIRE DAMPER
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
COP	COEFFICIENT OF PERFORMANCE
CR	CEILING REGISTER
DB	DRY BULB TEMPERATURE
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EFF	EFFICIENCY
EXT	EXTERNAL
F	DEGREES FAHRENHEIT
FPM	FEET PER MINUTE
FT	FEET
HP	HORSEPOWER
IN	INCH, INCHES
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
VD	VOLUME DAMPER
MH	MOUNTING HEIGHT
MIN	MINIMUM
MOD	MOTOR OPERATED DAMPER
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
OA	OUTSIDE AIR
PD	PRESSURE DROP
PS	PRESSURE SENSOR
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAGE
RA	RETURN AIR
SP	STATIC PRESSURE
TEMP	TEMPERATURE
TG	TOP GRILLE
TR	TOP REGISTER
TYP	TYPICAL
WB	WET BULB TEMPERATURE
WC, WG	WATER COLUMN
AFF	ABOVE FINISHED FLOOR
ABV	ABOVE
AD	ACCESS DOOR
BEL	BELOW
BET	BETWEEN
CLG	CEILING
CONN	CONNECT, CONNECTION
CONT	CONTINUED
DN	DOWN
EA	EACH
FL	FLOOR
FLEX	FLEXIBLE
FR	FROM
GALV	GALVANIZED
REQD	REQUIRED
SH	SHEET

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

MARK	MANUFACTURER & MODEL NO.	DESCRIPTION	MATERIAL	FINISH	ACCESSORIES & FEATURES
GRILLES & REGISTERS					
CR-1	METALARE SRH-1	6"x6" SURFACE MOUNT CEILING EXHAUST REGISTER	STEEL	WHITE	OPPOSED BLADE DAMPER
DG-1	METALARE DGDG	10"x8" DOOR GRILLE	STEEL	MILL	COLOR AS SELECTED BY ARCHITECT
SG-1	METALARE RH-1	10"x10" SURFACE MOUNT SOFFIT GRILLE	ALUMINUM	WHITE	--

ELECTRIC WALL HEATER SCHEDULE

MARK	MANUFACTURER & MODEL NO.	MBH	CFM	KW	VOLT/PH
WH-1	MARKEL E3323TTD-RP	5.1	400	1.5	120/1

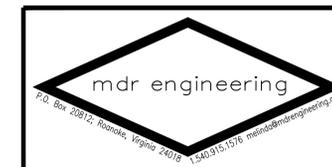
NOTES:
 PROVIDE WITH IN-BUILT THERMOSTAT AND DISCONNECT.

FAN SCHEDULE

UNIT	CFM	S.P.	RPM	MOTOR			SELECTION BASED ON GREENHECK	CONTROL
				WATTS	VOLTS	PH		
EF-1	400	0.25	900	48.2	120	1	CSP-A200	CONTINUOUS

SCHEDULE NOTES:

1. IN-LINE DIRECT DRIVE FAN, BACKDRAFT DAMPER, VARIABLE SPEED CONTROLLER, ELECTRICAL DISCONNECT. CONTROL AS INDICATED IN SCHEDULE.

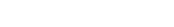


GENERAL ELECTRICAL NOTES

- ALL NOTES, SYMBOLS AND ABBREVIATIONS MAY NOT BE APPLICABLE TO THIS PROJECT.
- COMPLY WITH 2011 NEC.
- CONTRACTORS SHOULD SCHEDULE A SITE VISIT TO FAMILIARIZE THEMSELVES WITH CONDITIONS TO BE MET IN THE EXECUTION OF THE WORK UNDER THIS CONTRACT.
- COORDINATE SERVICE REQUIREMENTS WITH LOCAL POWER COMPANY, TELEPHONE, DATA AND/OR CABLE PROVIDER. PROVIDE C.T. CABINET AND TRANSFORMER PAD AS REQUIRED PER POWER COMPANY SPECIFICATIONS.
- COORDINATE EXACT PANEL, SWITCHBOARD AND MCC LOCATIONS WITH PLUMBING AND MECHANICAL DRAWINGS TO INSURE REQUIRED CLEARANCE ABOVE AND AROUND PANELS.
- PROVIDE INCREASED CONDUCTOR SIZES FOR 120/208 BRANCH CIRCUITS AS FOLLOWS UNO:

CIRCUIT BREAKER SIZE	0-100 FT. LENGTH	100-200 FT. LENGTH	200-300 FT. LENGTH	OVER 300 FT. LENGTH
20 AMP	12 AWG	10 AWG	6 AWG	4 AWG
30 AMP	10 AWG	8 AWG	4 AWG	3 AWG
- ALL EMPTY CONDUIT RUNS IN EXCESS OF 10 FT. SHALL BE PROVIDED WITH A PULLWIRE.
- ALL CONDUCTORS SHALL BE COPPER, THWN OR THHN.
- ALL BRANCH CIRCUIT WIRES TO BE SIZED AT LEAST #12 AWG THWN WITH #12 AWG GROUND, IN 3/4" CONDUIT UNLESS OTHERWISE INDICATED ON THE PLANS OR SCHEDULES.
- SHARED NEUTRALS ON RECEPTACLE BRANCH CIRCUITS IS NOT ACCEPTABLE.
- RECESSED DEVICES MAY BE ADJUSTED TO MATCH MASONRY COURSES IF APPLICABLE. MOUNT ALL BOXES TRUE AND PLUMB.
- COORDINATE WITH MECHANICAL CONTRACTOR ON EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENTS FOR HVAC EQUIPMENT.
- ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT ARE FOR HVAC EQUIPMENT SPECIFIED. IF SUBSTITUTE HVAC EQUIPMENT IS SUPPLIED, CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS IN AND/OR ADDITIONS TO ELECTRICAL REQUIREMENTS OF HVAC EQUIPMENT SUPPLIED.
- THE MANUFACTURER AND MODEL NUMBER SHOWN ON THE LIGHT FIXTURE SCHEDULE INDICATES THE STYLE, QUALITY AND STANDARD OF PERFORMANCE REQUIRED. OTHER MANUFACTURERS WITH EQUAL PRODUCTS ARE ACCEPTABLE ON APPROVAL.
- THE ELECTRICAL CONTRACTOR SHALL VERIFY THE TYPE OF CEILING SYSTEM WITH THE GENERAL CONTRACTOR. TO INSURE THAT ALL RECESSED LIGHTING FIXTURES ARE COMPATIBLE WITH THE CEILING SYSTEM BEING INSTALLED, LIGHTING FIXTURES SHOULD NOT BE ORDERED UNTIL THE TYPE OF CEILING HAS BEEN VERIFIED.
- THE ELECTRICAL CONTRACTOR SHALL VERIFY THAT ALL DOOR SWINGS ARE CORRECT BEFORE ROUGHING IN LIGHT SWITCH OUTLETS. LIGHT SWITCHES SHALL NOT BE LESS THAN 3" NOR MORE THAN 12" INCHES FROM DOOR TRIM.
- LOCATIONS FOR ELECTRICAL COMPONENTS INDICATED ON THE DRAWINGS ARE SCHEMATIC, UNLESS WRITTEN DIMENSIONS ARE GIVEN. THESE LOCATIONS SHALL BE FOLLOWED AS CLOSELY AS THE ACTUAL CONSTRUCTION AND THE WORK OF OTHER TRADES WILL ALLOW. EXACT LOCATIONS OF ALL COMPONENTS SHALL BE VERIFIED IN THE FIELD, PRIOR TO INSTALLATION. ADJUST LOCATIONS OF COMPONENTS AS REQUIRED TO AVOID INTERFERENCES WITH MECHANICAL EQUIPMENT AND OTHER BUILDING ELEMENTS.
- PRIOR TO LIGHT FIXTURE AND OVERHEAD RACEWAY INSTALLATION, VERIFY THAT THESE COMPONENTS CAN BE INSTALLED AT THE SPECIFIED HEIGHT ABOVE FINISHED FLOOR, INCLUDING ALLOWANCES FOR DUCTWORK AND PIPING. ADJUST LOCATIONS OF COMPONENTS AS REQUIRED TO OBTAIN THE INDICATED LIGHT FIXTURE MOUNTING HEIGHTS, SUBJECT TO THE APPROVAL OF THE A/E.

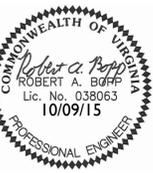
LEGEND

	CEILING OUTLET WITH FLUORESCENT FIXTURE, TYPE AS INDICATED		DEVICE WIRING POINT/TERMINAL
	WALL OUTLET WITH LIGHTING FIXTURE, TYPE AS INDICATED		NORMALLY OPEN SINGLE CIRCUIT MOMENTARY PUSHBUTTON SWITCH
	SHADING OR NL SUBSCRIPT DENOTES NIGHT LIGHT - CIRCUIT SO THAT THE OUTER TWO LAMPS OR FIXTURE OPERATES 24 HOURS A DAY. CIRCUIT ON LINE SIDE OF SWITCH FOR LIGHTS IN SAME AREA, OR WITH LIKE FIXTURES ON SEPARATE CIRCUIT.		NORMALLY CLOSED SINGLE CIRCUIT MOMENTARY PUSHBUTTON SWITCH
	TYPE AS INDICATED.		SINGLE POLE NORMALLY OPEN TOGGLE SWITCH
			SINGLE POLE NORMALLY CLOSED TOGGLE SWITCH
			RELAY OPERATING COIL
	DENOTES FIXTURE WITH TWO BALLASTS, ONE BALLAST CIRCUITED TO A SELF CONTAINED BATTERY. THE OTHER BALLAST TO BE SWITCHED WITH OTHER FIXTURES IN SAME AREA. TYPE AS INDICATED. CIRCUIT EMERGENCY BALLAST ON LINE SIDE OF SWITCH FOR LIGHTS IN SAME AREA, OR WITH LIKE FIXTURES ON SEPARATE CIRCUIT. BALLAST WILL OPERATE TWO 2' FIXTURES AT 90% RATED LUMENS FOR 90 MINUTES. UNIT WILL BE WIRED ON A SWITCHABLE CIRCUIT (UNSWITCHED CIRCUIT TO BATTERY PACK AND SWITCHED CIRCUIT TO FIXTURE BALLAST). UNIT WILL STRIKE NORMALLY OFF LAMP.		NORMALLY OPEN RELAY CONTACT
	\$ LIGHT SWITCH, SINGLE POLE DEVICE, 20 AMP, 120/277 VOLT, FLUSH MOUNT 48" AFF TO TOP OF BOX. "K" INDICATES KEY OPERATED. "D" INDICATES DIMMER SWITCH.		NORMALLY CLOSED RELAY CONTACT
	□ OCCUPANCY SENSOR, MOTION SENSITIVE ON, AUTOMATIC TIMED OFF DUAL TECHNOLOGY TYPE-ULTRASONIC AND INFRARED.		NORMALLY OPEN/NORMALLY CLOSED RELAY CONTACT
	⊕ 120 V, 3 W, 20 AMP, DUPLEX CONVENIENCE RECEPTACLE, FLUSH MOUNT 20" AFF TO TOP OF BOX, NEMA 5-20R		FUSE, NON RESETTABLE
	⊕ ₄₈ DUPLEX RECEPTACLE WITH MOUNTING HEIGHT.		THERMAL OVERLOAD
	⊕ _A 120 V, 3 W, 20 AMP, DUPLEX CONVENIENCE RECEPTACLE, FLUSH MOUNT A INDICATES 6" ABOVE COUNTERTOP OR BACKSPASH TO TOP OF BOX		CIRCUIT INTERRUPTER, 1-POLE MANUAL RESET
	⊕ _{G,WP} 120 V, 3 W, 20 AMP, DUPLEX CONVENIENCE RECEPTACLE, FLUSH MOUNT G INDICATES GFCI PROTECTED, WP INDICATES WEATHER PROOF WHILE IN USE.		CIRCUIT BREAKER
	A-1 CIRCUIT HOME RUN AND CONNECTION TO DEVICE, HASH MARKS INDICATE NUMBER OF CONDUCTORS EXCEPT GROUNDS. ARROW HEADS INDICATE NUMBER OF CIRCUITS. PANEL DESIGNATION AS INDICATED. BRANCH CONDUCTORS ARE #12 AWG COPPER IN 3/4" MINIMUM RACEWAY, UNO. VERIFY NUMBER OF CONDUCTORS WITH EQUIPMENT SUPPLIED.		GROUND
	□ JUNCTION BOX / PULL BOX		CONNECTIONS. LEFT=NOT CONNECTED. RIGHT=CONNECTED
	□ SAFETY SWITCH, HEAVY DUTY, FUSIBLE OR NON-FUSIBLE, POLES AS REQUIRED, "F" INDICATES FUSIBLE.		MOTOR/PUMP
	□ C1 CONTACTOR NUMBER AS INDICATED		SCHEDULE TAG
	□ TC TIME CLOCK		ELECTRICAL METER
	□ PANEL BOARD AS SCHEDULED		
	⊕ 3/4"x4"x4" PAINTED PLYWOOD TELEPHONE/DATA BACKBOARD WITH GROUND. PROVIDE #6 GROUNDING CONDUCTOR AND GROUND		

ABBREVIATIONS

A	AMP
AFF	ABOVE FINISHED FLOOR
AP	ALARM PANEL
AHU	AIR HANDLING UNIT
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAGE
BC	BATTERY CHARGER
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CP	CONTROL PANEL
CR	CONTROL RELAY
CTB	CABLE TAP BOX
CU	COPPER
DETD	DUAL ELEMENT TIME DELAY
DPS	DOOR POSITION SWITCH
EX	EXISTING TO REMAIN
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
EVA	ELECTRIC VALVE ACTUATOR
EM	EMERGENCY
ER	EXISTING TO BE RELOCATED
EWC	ELECTRIC WATER COOLER
EWB	ELECTRIC WATER HEATER
GFI	GROUND FAULT INTERRUPTER
GND/G	GROUND
HP	HEAT PUMP
HMI	HUMAN MACHINE INTERFACE
LI	LIGHTING ARRESTOR
IG	ISOLATED GROUND
JB	JUNCTION BOX
KW	KILOWATT
KVA	KILOVOLT AMPERE
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUF. ASSOC
NL	NIGHT LIGHT
OL	OVERLOAD
PB	PUSHBUTTON MOMENTARY CONTACT SWITCH
PS	POWER SUPPLY
RAIL	REMOTE ALARM INDICATOR LIGHT
RGS	RIGID GALVANIZED STEEL CONDUIT
RCH	REHEAT COIL
RTU	ROOFTOP UNIT
SP	SURGE PROTECTOR
TB	TERMINAL BLOCK
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

THE LANE GROUP



GRAYSON COUNTY RESTROOM BUILDING INDEPENDENCE, VIRGINIA

ELECTRICAL LEGEND AND ABBREVIATIONS

DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

E001

TLG PROJECT #13013

THE LANE GROUP © 2015

SECTION 16000 - ELECTRICAL SPECIFICATIONS

PART 1 - GENERAL

1.1 BASIC ELECTRICAL METHODS

- A. DRAWINGS ARE SCHEMATIC AND DIAGRAMMATIC. ELECTRICAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER IN ORDER TO FUNCTION PROPERLY AND FIT WITHIN BUILDING CONSTRUCTION AND FINISHES. ELECTRICAL CONDUCTORS, CONDUIT, COMPONENTS, NOT SHOWN OR SPECIFIED, WHICH ARE REQUIRED FOR ANY DEVICE OR SYSTEM TO PRODUCE A COMPLETE AND OPERATIVE SYSTEM ARE REQUIRED TO BE FURNISHED AND INSTALLED.
- B. ROUTE CONDUITS AND WIRING ASSOCIATED WITH NEW EQUIPMENT AND SYSTEMS ABOVE CEILINGS AND CONCEALED WITHIN BUILDING STRUCTURE AS MUCH AS POSSIBLE.
- C. CIRCUIT GROUPING--PROVIDE PROPER NUMBER OF CONDUCTORS AND CONDUITS OR CABLES TO PROVIDE OPERATIVE SYSTEM AS INDICATED ON CONTRACT DOCUMENTS. DO NOT REGROUP ANY FEEDER CIRCUITS, BRANCH CIRCUITS, AND HOME RUNS AT ANY POINT, FROM THAT SHOWN ON CONTRACT DOCUMENTS.
- D. NEW EQUIPMENT, SWITCHES, DEVICES, SHOWN MOUNTED ON AND/OR ADJACENT TO EQUIPMENT, WHICH IF INSTALLED, WOULD IMPAIR PROPER OPERATION OF NEW EQUIPMENT, SHALL BE RELOCATED AS REQUIRED SO EQUIPMENT WILL FUNCTION PROPERLY.
- E. SEAL AND MAKE PERMANENTLY WATERTIGHT PENETRATIONS BY ELECTRICAL RACEWAYS OR EQUIPMENT THROUGH ROOFS, CEILINGS, WALLS OR FLOORS.
 - 1. SEAL PENETRATIONS IN NON-FIRE RATED CEILINGS, WALLS OR FLOORS.
 - 2. SEAL PENETRATIONS IN FIRE RATED WALLS WITH FIRE RATED MATERIAL.
- F. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR EQUIPMENT CONNECTORS.
- G. INSTALL EQUIPMENT AND MATERIALS TO PROVIDE REQUIRED MAINTENANCE AND CODE WORKING CLEARANCE FOR SERVICING AND MAINTENANCE. COORDINATE FINAL LOCATION OF CONCEALED EQUIPMENT AND DEVICES REQUIRING ACCESS WITH FINAL LOCATION OF REQUIRED ACCESS PANELS AND DOORS. ALLOW REQUIRED SPACE FOR REMOVAL OF PARTS THAT REQUIRE REPLACEMENT OR SERVICING.

1.2 QUALITY ASSURANCE

- A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
- B. COMPLY WITH 2011 NFPA 70 - NATIONAL ELECTRICAL CODE.

PART 2 - PRODUCTS

2.1 GENERAL

- A. ALL DEVICES AND COMPONENTS SHALL BE SPECIFICATION GRADE PRODUCTS. SIZES, WATTAGES, AMPACITIES, AND OTHER SPECIFICS ARE INDICATED ON THE DRAWINGS OR SPECIFIED HEREIN. ALL ELECTRICAL COMPONENTS SHALL BE READILY AVAILABLE ITEMS WHICH ARE CURRENTLY IN PRODUCTION BY THE MANUFACTURER.

2.2 HANGERS AND SUPPORTS

- A. PRODUCT REQUIREMENTS: FURNISH AND INSTALL APPROVED MATERIALS, SIZES, AND TYPES OF ANCHORS, FASTENERS, AND SUPPORTS TO CARRY LOADS OF EQUIPMENT AND CONDUIT.
- B. MATERIALS AND FINISHES: CORROSION RESISTIVE.
- C. ANCHORS AND FASTENERS:
 - 1. CONCRETE SURFACES: SELF-DRILLING ANCHORS AND EXPANSION ANCHORS.
 - 2. HOLLOW MASONRY, PLASTER, AND GYPSUM BOARD PARTITIONS: TOGGLE BOLTS AND HOLLOW WALL FASTENERS.
 - 3. SOLID MASONRY WALLS: EXPANSION ANCHORS.
 - 4. SHEET METAL: SHEET METAL SCREWS.
 - 5. WOOD: WOOD SCREWS.

2.3 RECEPTACLES

- A. DUPLEX RECEPTACLES: SPECIFICATION GRADE DUPLEX RECEPTACLES, 3-WIRE GROUNDING TYPE, WIRED WITH SCREW TERMINALS, 125 VOLT, 20 AMP, NEMA 5-20R CONFIGURATION. EXPOSED FACES TO MATCH EXISTING FACILITY FINISHES. COVER PLATES TO BE TYPE 302 STAINLESS STEEL WITH WHITE PAINTED FINISH. PROVIDE GROUND FAULT INTERRUPTER RECEPTACLES WHERE INDICATED ON THE DRAWINGS, WITH TEST AND RESET BUTTONS ON THE EXPOSED FACE, CLEARLY MARKED. THROUGH-FEED GFCI RECEPTACLES MAY BE USED, IF ALL PROTECTED RECEPTACLES ARE SO MARKED. DEVICES SHOWN AS EXISTING DUPLEX OR GFCI RECEPTACLES SHALL BE REPLACED WITH NEW DEVICES AND COVERS.

2.4 CONDUIT

- A. ALL INDOOR CONDUCTORS SHALL BE RUN IN ELECTRICAL METALLIC TUBING (EMT), 3/4" MINIMUM SIZE. FLEXIBLE METAL CONDUITS OR MC CABLE SHALL TERMINATE AT A JUNCTION BOX LOCATED ABOVE THE ACOUSTICAL CEILING, DIRECTLY ABOVE THE DEVICE SERVED BY THE CONDUIT. MINIMUM CONDUIT SIZE SHALL BE 3/4", EXCEPT AS SPECIFICALLY NOTED OTHERWISE. FITTINGS FOR EMT SHALL BE STEEL SET SCREW, OR GLAND COMPRESSION TYPE. PROVIDE PULL BOXES AT NECESSARY POINT TO PREVENT INJURY TO INSULATION OR DAMAGE FROM PULLING RESISTANCE ON LONG CIRCUIT ROUTES.
- B. AT ALL CONNECTIONS TO MOTORIZED EQUIPMENT OR EQUIPMENT SUBJECT TO VIBRATION, PROVIDE AN 18 INCH MINIMUM AND 48 INCH MAXIMUM SECTION OF LIQUID-TIGHT FLEXIBLE METAL CONDUIT. FLEXIBLE METAL CONDUIT SHALL BE USED FOR LIGHTING FIXTURE WIRING.
- C. ALL CONDUITS SHALL BE GROUNDED PER NEC AND INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR.

2.5 RACEWAYS FOR DATA/TELEPHONE WIRING

- A. ALL VOICE/DATA WIRING SHALL BE RUN IN EMT, WITH PLASTIC BUSHINGS, 1" MINIMUM SIZE, WITH NYLON PULL STRING INSTALLED WITH 18 INCH EXCESS COILED AT EACH END, IN LOCATIONS INDICATED ON THE DRAWINGS. ROUTE DATA/TELEPHONE CONDUITS FROM OUTLETS INTO CEILING SPACE. CONDUIT SHALL TURN OUT TOWARD THE SPACE 6 INCHES FROM WALL AT HEIGHT APPROXIMATELY 18 INCHES ABOVE SUSPENDED ACOUSTICAL CEILINGS, IN AN ACCESSIBLE LOCATION.

2.6 CONDUCTORS

- A. ALL WIRE SHALL BE COPPER CONDUCTOR, 600 VOLT, THHN, WITH MOISTURE-RESISTANT INSULATION. SIZE ALL CONDUCTORS PER NEC, PROVIDING VOLTAGE DROP OF 3 PER CENT OR LESS. FOR ALL USES, MINIMUM WIRE SIZE SHALL BE AWG #12. WIRE SIZES LARGER THAN #10 SHALL BE STRANDED, ALL OTHERS SHALL BE SOLID. PROVIDE AMPACITY BASED ON 75 DEGREES C RATING FOR CONDUCTOR SIZES #1, AND LARGER, AND BASED ON 60 DEGREE RATING FOR CONDUCTOR SIZES SMALLER THAN #1 AWG. PROVIDE FULL RATED NEUTRAL CONDUCTORS. TYPE AC ARMORED CABLE SHALL NOT BE USED.

2.7 ELECTRICAL IDENTIFICATION

- A. PROVIDE PLASTIC NAMEPLATES AT ALL EXISTING PANELBOARDS WHERE CIRCUITS ARE MODIFIED, AND AT ALL DISCONNECTS. NAMEPLATES SHALL BE THREE-LAYER LAMINATED PLASTIC, WHITE LETTERS ENGRAVED INTO A BLACK BACKGROUND, WITH 1/4" HIGH LETTERS. FOR DISCONNECTS, IDENTIFY EQUIPMENT SERVED, INCLUDING VOLTAGE RATINGS. FOR PANELBOARDS, IDENTIFY PANELBOARD, VOLTAGE, NUMBER OF PHASES, AND THE DISTRIBUTION PANELBOARD WHICH PROVIDES THE POWER FEED.
- B. PROVIDE NEATLY TYPED CIRCUIT BREAKER DIRECTORY IN ALL PANELBOARDS, INCLUDING EXISTING PANELBOARDS WITH CIRCUITS MODIFIED AS PART OF THIS WORK. DIRECTORY SHALL SHOW THE CIRCUIT NUMBER AND COMPLETE DESCRIPTION OF ALL COMPONENTS ON ALL CIRCUITS, INCLUDING ROOM NUMBERS OR ROOM NAMES WHERE COMPONENTS ARE LOCATED, AS APPROVED BY THE OWNER.
- C. PROVIDE WIRE MARKERS ON EACH CONDUCTOR IN PANELBOARDS, PULL BOXES, OUTLET BOXES, JUNCTION BOXES, AND AT LOAD CONNECTION. IDENTIFY WIRE WITH BRANCH CIRCUIT OR FEEDER NUMBER FOR POWER AND LIGHTING CIRCUITS, AND WITH CONTROL WIRE NUMBER FOR EQUIPMENT, AS IDENTIFIED ON EQUIPMENT MANUFACTURER'S SHOP DRAWINGS FOR CONTROL WIRING.
- D. LABEL ALL RECEPTACLES THAT HAVE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION.
- E. LABEL ALL RECEPTACLES COVER PLATES ON THE BACK FACE WITH A PERMANENT MACHINE-PRINTED LABEL, INDICATING THE PANELBOARD AND CIRCUIT NUMBER WHICH SERVES THE RECEPTACLE.

2.8 DISCONNECTS

- A. QUICK MAKE, QUICK BREAK HEAVY DUTY DISCONNECT. VOLTAGE, PHASE, AND POLES AS SCHEDULED, SAFETY SWITCHES, FUSED OR NON FUSED AS SCHEDULED. NEMA 1 OR NEMA 3R ENCLOSURE AS NOTED.

2.9 OTHER MATERIALS

- A. PROVIDE OTHER MATERIALS AND MISCELLANEOUS COMPONENTS, NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR A COMPLETE AND PROPER INSTALLATION, AS SELECTED BY THE CONTRACTOR

SUBJECT TO THE APPROVAL OF THE A/E.

2.10 PANELBOARDS

- A. LIGHTING AND APPLIANCE PANELBOARDS: (120 /208 VOLT, 3 PHASE, 4 WIRE) EQUAL TO CUTLER HAMMER, SIEMENS, SQUARE-D, GENERAL ELECTRIC, AND APPROVED PRODUCTS.
- B. GENERAL: INSTALL AND FURNISH COMMERCIAL CIRCUIT BREAKER PANELBOARDS AS SHOWN ON THE PLANS AND INDICATED ON THE PANELBOARD SCHEDULE. THE PANELBOARDS SHALL BE DEAD FRONT EQUIPPED WITH MOLDED CASE CIRCUIT BREAKERS, ENCLOSURES, BUSES, GROUND AND NEUTRAL BARS, FRONT COVERS WITH DOORS INCLUDING DIRECTORY FRAME, AND GROUT IN LOCKS. CIRCUIT BREAKERS SHALL BE REMOVABLE WITHOUT DISTURBING ADJACENT UNITS. SUB PANEL NEUTRALS SHALL BE ISOLATED FROM THEIR ENCLOSURES AND GROUNDS. PANELS USED AS SERVICE ENTRANCE DUTY SHALL BE U.L. LISTED AND LABELED AS SUITABLE FOR SERVICE ENTRANCE EQUIPMENT. USE OF LOAD CENTERS IS NOT ACCEPTABLE.
- C. CIRCUIT BREAKERS: SHALL BE THERMAL-MAGNETIC TYPES WITH INVERSE TIME ELEMENT CHARACTERISTICS, UNLESS OTHERWISE SHOWN. MULTI-POLE BREAKERS SHALL AUTOMATICALLY OPEN ALL POLES WHEN AN OVERLOAD OCCURS IN ANY POLE. EXTERNAL TIE-HANDLE CONSTRUCTION WHERE ADJACENT POLES ARE ON THE SAME PHASE OR LEG WILL NOT BE ACCEPTED. ONE HALF 1/2 WIDTH (MIN) BREAKERS ARE NOT ACCEPTABLE. TANDEM BREAKERS ARE NOT ACCEPTABLE. BRANCH CIRCUIT BREAKERS USED FOR SWITCHING DUTY SHALL BE U.L. LISTED AS SWD TYPE. GROUND FAULT CIRCUIT INTERRUPTER PROTECTION AS REQUIRED BY NEC SHALL BE PROVIDED BY GROUND FAULT CIRCUIT INTERRUPTER BREAKERS UNLESS OTHERWISE NOTED. MINIMUM MAIN BREAKER INTERRUPTING RATINGS SHALL BE 22,000 AIC SYMMETRICAL AT 250 VOLTS AS UNLESS SCHEDULED. BRANCH CIRCUIT BREAKERS SHALL HAVE A MINIMUM INTERRUPTING RATING OF 10,000 AIC SYMMETRICAL AT 250 VOLTS AC. UNUSED CIRCUIT BREAKER SPACE SHALL BE COVERED BY BLANK FILLERS.
- D. CONSTRUCTION:
 - 1. PANELBOARD CABINETS AND FRONTS SHALL BE STEEL. THE SIZE OF THE WIRING GUTTERS AND GAUGE OF STEEL SHALL BE IN ACCORDANCE WITH NEMA STANDARDS AND NEC REQUIREMENTS. FRONTS SHALL HAVE HINGED DOORS WITH FLUSH STAINLESS STEEL DOOR PULLS AND FLUSH LOCK. ALL PANELS SHALL BE KEYPAD ALIKE.
 - 2. DIRECTORY: PROVIDE A TYPE WRITTEN DIRECTORY CARD TO INDICATE THE CIRCUIT NUMBER, ITEM CONNECTED, AND LOCATION OF EACH CIRCUIT. THE DIRECTORY CARD SHALL BE MOUNTED IN A METAL FRAME WITH A TRANSPARENT COVER.
 - 3. PROVIDE AN ENGRAVED NAMEPLATE WITH THE PANELBOARD NAME AS SCHEDULED ON THE DRAWINGS.
 - 4. BUSSING: PROVIDE BUS BAR CONNECTIONS TO BREAKERS USING BOLTED CONNECTIONS. USE PHASE-SEQUENCE A-B-C ADJACENT BUS CONNECTIONS TO PERMIT TWO POLE BREAKERS TO BE INSTALLED AT ANY POLE SPACE AND BE CONNECTED TO ADJACENT PHASES. ALL CURRENT CARRYING PARTS SHALL BE PLATED AND SHALL MEET ESTABLISHED HEAT RISE CHARACTERISTICS FOR UL 67 AND UL 991.
 - 5. FINISH: FACTORY PRIMED WITH A RUST INHIBITING PRIMER AND PAINTED WITH A LIGHT GRAY ENAMEL PAINT SIMILAR IN COLOR TO ANSI NO. 49. PROVIDE A SPRAY CAN OF MATCHING TOUCH-UP PAINT.

2.11 LIGHTING FIXTURES--

- PROVIDE ALL ACCESSORIES REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM. FURNISH FIXTURE TYPE, MODEL STYLE, COLOR AND FINISH AS INDICATED IN LIGHT FIXTURE SCHEDULE, AND NOTED IN THE SPECIFICATIONS FOR PARTICULAR LIGHT FIXTURES.
- A. FLUORESCENT FIXTURES: FURNISH FLUORESCENT FIXTURES COMPLETE WITH LAMPS AS SCHEDULED AND HIGH EFFICIENCY ELECTRONIC BALLASTS, LESS THAN 10% THD AND U.L. APPROVED. FURNISH FLUORESCENT FIXTURES WITH LAMP SOCKETS COMPATIBLE WITH LAMP CONNECTION PINS.
- B. FLUORESCENT LAMPS: PROVIDE ENERGY SAVING LAMPS WITH WATTAGE AS SHOWN IN THE SCHEDULE. LAMPS SHALL GENERALLY BE T-8 TYPE, 32 WATT WITH BI-PIN SOCKETS. LAMPS SHALL BE MANUFACTURED BY GENERAL ELECTRIC OR PHILLIPS. PROVIDE LOW MERCURY CONTENT, TOLP EPA COMPLIANT LAMPS. LAMPS TO DELIVER 95% LUMEN MAINTENANCE AND REDUCED LAMP END BLACKENING. PROVIDE A CRI OF 75 OR GREATER FOR T-8 LAMPS USING 32 WATTS. THE COLOR TEMPERATURE SHALL BE 3500K. LAMPS SHALL HAVE GREEN COLORED END CAPS. COMPACT FLUORESCENTS SHALL HAVE A PIN TYPE SOCKETS.
- C. BALLAST: MULTI VOLT, 60 HERTZ, ELECTRONIC TYPE A. FLUORESCENT LAMP ELECTRONIC BALLAST LESS THAN 10% THD, 32 WATT, SOUND RATING A. BALLAST SHALL BE OF THE PARALLEL LAMP CONNECTION DESIGN SUCH THAT LAMPS REMAIN FULLY ILLUMINATED IF ANY ADJACENT LAMP FAILS
- D. LENS AND ENCLOSURES: ACRYLIC FIXTURE LENS. WHERE SHOWN, PROVIDE ACRYLIC PRISMATIC LENS, INJECTION MOLDED, ULTRAVIOLET STABILIZED. PARABOLIC LENS SHALL HAVE ALZAK ALUMINUM REFLECTORS, LOW IRIDESCENT TYPE, WITH CELL SIZE AND CONFIGURATION AS SHOWN IN THE FIXTURE SCHEDULE. MINIMUM LENS THICKNESS SHALL BE .125 INCHES.
- E. EXIT LIGHTING UNITS: FIXTURES SHALL HAVE A LED WITH RED LETTERS ON AN ALUMINUM FACE AND BUILT-IN ARROWS TO ALLOW ANY DIRECTIONAL COMBINATION. LIGHT-EMITTING DIODES, LED AC VOLT LAMPS SHALL BE PROVIDED WITH A RATED LIFE OF 70,000 HOURS MINIMUM. 5 WATTS MAXIMUM PER SIDE.
- F. EMERGENCY LIGHTING; RATED AT 115 VOLTS, 60 HERTZ, SINGLE PHASE, AC INPUT WITH 12 VOLT DC OUTPUT, RATED FOR TOTAL EMERGENCY LIGHTING LOAD. SYSTEM SHALL AUTOMATICALLY ENERGIZE EMERGENCY AND DC EGRESS LIGHTS UPON FAILURE OF NORMAL POWER AND DE-ENERGIZE LIGHTS UPON RESTORATION OF NORMAL POWER. THE UNIT SHALL AUTOMATICALLY BE MAINTAINED IN A CHARGED CONDITION.
 - 1. CASE: ACID-RESISTANT, CONTAINING BATTERY, CHARGER AND CONTROLS, RELAYS, INDICATING LIGHTS, SWITCHES, AND ALL NECESSARY COMPONENTS. CASE SHALL CONTAIN COMPARTMENTS TO SEPARATE BATTERY FROM OTHER CONTROLS. THE ENCLOSURE COLOR SHALL BE WHITE AND MATCH EXIT LIGHT HOUSING COLOR. CASE SHALL BE LOW PROFILE ARCHITECTURAL STYLE. COMBINATION EXIT SIGN AND EMERGENCY LIGHT SHALL BE PROVIDED AS A COMBINATION UNIT AS SCHEDULED.
 - 2. BATTERY: TWO 3-CELL, 6 VOLT OR 12 VOLT, SEALED LEAD-ACID, CALCIUM ALLOY, GRID TYPE. PROVIDE A 90 MINUTE DURATION WITHOUT POWER INPUT, WITH LAMP LOADS SPECIFIED.
 - 3. CHARGER: COMPLETELY AUTOMATIC, SOLID STATE, TWO-RATE, WITH CAPACITY TO RESTORE BATTERIES TO FULL CHARGE WITHIN 12 HOURS AFTER A FULL LOAD DISCHARGE FOR 1 1/4 HOURS. CHARGER SHALL MONITOR BATTERY VOLTAGE AND AUTOMATICALLY RETURN TO HIGH STATE AS REQUIRED. SOLID STATE COMPONENTS SHALL BE RATED MINIMUM 200 PERCENT OF OPERATING DUTY.
 - 4. CONTROLS: ON-OFF SWITCH, FRONT-MOUNTED PUSH-TO-TEST SWITCH, READY STATE LED LIGHT.

2.12 ELECTRICAL EQUIPMENT AND CONNECTIONS TO MECHANICAL EQUIPMENT

- A. FURNISH AND INSTALL THE FOLLOWING:
 - 1. CONDUIT, WIRING AND ELECTRICAL CONNECTIONS TO MOTORS, SAFETY SWITCHES, STARTERS, RELAYS, ELECTRICAL INTERLOCK CIRCUITS, UNIT HEATERS, FAN COIL UNITS, AIR HANDLING UNITS, AND OTHER SIMILAR EQUIPMENT, REQUIRED FOR COMPLETE AND READY FOR OPERATION.
 - 2. STARTERS AS INDICATED ON DRAWINGS EXCEPT CUSTOM DESIGNED STARTERS SUCH AS THOSE PHYSICALLY MOUNTED ON THE UNIT OR ANY PIECE OF EQUIPMENT WHERE STARTER IS FURNISHED AS AN INTEGRAL PART OF THE EQUIPMENT.
 - 3. THERMOSTAT AND SPECIAL WIRE OTHER THAN BUILDING WIRE.

PART 3 - EXECUTION

3.1 INSTALLATION - GROUNDING AND BONDING

- A. PROVIDE BONDING AND GROUNDING IN CONFORMANCE WITH NFPA 70.
- B. EQUIPMENT GROUNDING CONDUCTOR: PROVIDE SEPARATE, INSULATED CONDUCTOR WITHIN EACH FEEDER AND BRANCH CIRCUIT RACEWAY. TERMINATE EACH END ON SUITABLE LUG, BUS, OR BUSHING.

3.2 INSTALLATION - HANGERS AND SUPPORTS

- A. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED INSTRUCTIONS.
- B. DO NOT FASTEN SUPPORTS TO PIPES, DUCTS, MECHANICAL EQUIPMENT, AND CONDUIT.
- C. DO NOT USE SPRING STEEL CLIPS AND CLAMPS.
- D. DO NOT USE POWDER-ACTUATED ANCHORS.
- E. OBTAIN PERMISSION FROM BUILDING STRUCTURAL ENGINEER BEFORE DRILLING OR CUTTING STRUCTURAL MEMBERS.
- F. FABRICATE SUPPORTS FROM STRUCTURAL STEEL ANGLE OR STRUCTURAL STEEL CHANNEL. RIGIDLY WELD MEMBERS OR USE HEXAGON HEAD BOLTS TO PRESENT NEAT APPEARANCE WITH ADEQUATE STRENGTH AND RIGIDITY. USE SPRING LOCK WASHERS UNDER ALL NUTS.
- G. INSTALL SURFACE-MOUNTED CABINETS AND PANELS WITH MINIMUM OF FOUR ANCHORS.
- H. IN WET AND DAMP LOCATIONS USE STRUCTURAL STEEL CHANNEL SUPPORTS TO STAND CABINETS AND PANELBOARDS ONE INCH OFF WALL.

3.3 INSTALLATION - CONDUCTORS AND CABLES

- A. WIRING METHODS:
 - 1. CONCEALED DRY INTERIOR LOCATIONS: USE ONLY BUILDING WIRE, TYPE THHN/THWN INSULATION IN EMT, FMC, OR RGS METALLIC RACEWAY.

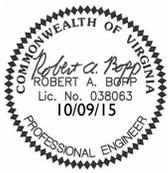
- 2. EXPOSED DRY INTERIOR LOCATIONS: USE ONLY BUILDING WIRE, TYPE THHN/THWN INSULATION IN EMT OR RGS METALLIC RACEWAY. PROVIDE RGS WHERE EXPOSED TO MECHANICAL DAMAGE.
- 3. ABOVE ACCESSIBLE CEILINGS: USE ONLY BUILDING WIRE, TYPE THHN/THWN INSULATION IN EMT, FMC, OR RGS METALLIC RACEWAY.
- 4. WET OR DAMP INTERIOR AND EXTERIOR LOCATIONS: USE ONLY BUILDING WIRE, TYPE THWN INSULATION IN RGS RACEWAY.
- 5. MINIMUM RACEWAY SIZE IS 3/4" DIAMETER.
- 6. BELOW GRADE: USE ONLY BUILDING WIRE TYPE THHN/THWN INSULATION IN PVC SCHEDULE 40 RACEWAY.
- 7. IDENTIFY WIRE AND CABLE USING VINYL MARKERS.
- B. USE SOLID COPPER CONDUCTORS FOR FEEDERS AND BRANCH CIRCUITS #10 AWG AND SMALLER. USE STRANDED COPPER CONDUCTORS FOR #8AWG AND LARGER CONDUCTORS.
- C. USE STRANDED COPPER CONDUCTORS FOR CONTROL CIRCUITS AND FINAL CONNECTIONS TO ALL VIBRATION EQUIPMENT.
- D. USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS.
- E. USE CONDUCTOR NOT SMALLER THAN 14 AWG FOR CONTROL CIRCUITS.
- F. USE 10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS LONGER THAN 75 FEET.
- G. PULL ALL CONDUCTORS INTO RACEWAY AT SAME TIME.
- H. USED APPROVED WIRE PULLING LUBRICANT FOR ALL BUILDING WIRE.
- I. PROTECT EXPOSED CABLE FROM DAMAGE.
- J. NEATLY TRAIN AND LACE WIRING INSIDE BOXES, EQUIPMENT, AND PANELBOARDS.
- K. CLEAN CONDUCTOR SURFACES BEFORE INSTALLING LUGS AND CONNECTORS.
- L. MAKE SPLICES, TAPS, AND TERMINATIONS TO CARRY FULL AMPACITY OF CONDUCTORS WITH NO PERCEPTIBLE TEMPERATURE RISE.
- M. USE SOLDER LESS PRESSURE COMPRESSION CONNECTORS WITH INSULATING COVERS FOR COPPER CONDUCTOR SPLICES AND TAPS, 8 AWG AND SMALLER.
- N. USE CONDUCTORS RATED 90 DEGREES C, INSIDE A BALLAST COMPARTMENT OR WITHIN 6 INCHES OF ANY BALLAST.

3.4 INSTALLATION - RACEWAYS AND BOXES

- A. INSTALL NONMETALLIC CONDUIT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. NONMETALLIC CONDUIT SHALL ONLY BE USED UNDER SLABS OR DIRECT BURIED IN EARTH. CONDUIT PENETRATIONS THROUGH SLAB INCLUDING ELBOWS SHALL BE RGS.
- B. CONDUIT ROUTING INDICATED ON DRAWINGS ARE APPROXIMATE LOCATIONS UNLESS DIMENSIONED. ROUTE PARALLEL AND PERPENDICULAR TO BUILDING CONSTRUCTION FOR COMPLETE WIRING SYSTEM REGARDLESS WHETHER EXPOSED OR CONCEALED.
- C. ARRANGE SUPPORTS TO PREVENT MISALIGNMENT DURING WIRING INSTALLATION.
- D. GROUP RELATED CONDUITS; SUPPORT USING CONDUIT RACK. CONSTRUCT RACK USING APPROVED STEEL CHANNEL, PROVIDE SPACE ON EACH FOR 25 % ADDITIONAL CONDUITS.
- E. FASTEN CONDUIT SUPPORTS TO BUILDING STRUCTURE AND SURFACES UNDER PROVISIONS OF THIS SECTION.
- F. DO NOT SUPPORT CONDUIT WITH WIRE OR PERFORATED PIPE STRAPS IN ANY TYPE STRUCTURE. REMOVE WIRE USED FOR TEMPORARY SUPPORTS. STEEL TIE WIRE MAY BE USED TO ANCHOR CONDUIT DOWN TO REINFORCING RODS IN CONCRETE ENCASUREMENT ONLY.
- G. DO NOT ATTACH CONDUIT TO CEILING SUPPORT WIRES.
- H. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND PRESENT NEAT APPEARANCE.
- I. ROUTE ALL CONDUIT WHETHER EXPOSED OR CONCEALED PARALLEL AND PERPENDICULAR TO WALLS, CEILINGS, BUILDING STRUCTURES, ETC.
- J. MAINTAIN REQUIRED CLEARANCE BETWEEN CONDUIT AND PIPING.
- K. MAINTAIN 12 INCH CLEARANCE BETWEEN CONDUIT AND SURFACES WITH TEMPERATURES EXCEEDING 104 DEGREES F.
- L. CUT EMT CONDUIT SQUARE USING SAW OR PIPECUTTER; DE-BURR CUT ENDS AND REAM.
- M. BRING CONDUIT TO SHOULDER OF FITTINGS; FASTEN SECURELY.
- N. USE CONDUIT HUBS OR SEALING LOCKNUTS TO FASTEN CONDUIT TO SHEET METAL BOXES IN DAMP AND WET LOCATIONS AND TO CAST BOXES.
- O. INSTALL NO MORE THAN EQUIVALENT OF THREE 90-DEGREE BENDS BETWEEN BOXES. USE CONDUIT BODIES TO MAKE SHARP CHANGES IN DIRECTION, AS AROUND BEAMS.
- P. AVOID MOISTURE TRAPS; PROVIDE JUNCTION BOX WITH DRAIN FITTING AT LOW POINTS IN CONDUIT SYSTEM.
- Q. PROVIDE SUITABLE FITTINGS TO ACCOMMODATE EXPANSION AND DEFLECTION WHERE CONDUIT CROSSES CONTROL AND EXPANSION JOINTS.
- R. PROVIDE SUITABLE NYLON PULL STRING OR #14 AWG STEEL WIRE IN EACH CONDUIT EXCEPT SLEEVES AND NIPPLES.
- S. USE SUITABLE CAPS TO PROTECT INSTALLED CONDUIT AGAINST ENTRANCE OF DIRT AND MOISTURE.
- T. GROUND AND BOND CONDUIT PER NFPA 70
- U. COAT ALL METALLIC CONDUIT MALE THREADS WITH "GENERAL ELECTRIC" RTV SILICONE SEALER WHERE CONDUIT IS INSTALLED IN EXTERIOR AREAS OR IN CONTACT WITH CONCRETE OR EARTH.
- V. INSTALL ALL ABOVE GRADE FEEDERS IN GALVANIZED OR SHERADIZED THICK WALL RIGID STEEL (GRS), INTERMEDIATE METAL OR CONDUIT (IMC).
- W. CONDUITS SIZED AS INDICATED ON DRAWINGS. WHERE SIZE NOT INDICATED, SIZE PER NFPA 70.
- X. CAP ALL UPTURNED CONDUITS DURING CONSTRUCTION ROUGH-IN TO PREVENT MOISTURE OR DEBRIS FROM ENTERING. PULL THROUGH EACH AND EVERY CONDUIT A DRY SWAB OF SUFFICIENT SIZE TO REMOVE ANY AND ALL MOISTURE.
- Y. MAXIMUM 6 FOOT LENGTH FLEXIBLE METAL CONDUIT (GREENFIELD), MC CABLE, OR FLEXIBLE LIQUIDTITE PERMITTED.
- Z. ASSURE GROUND CONTINUITY ON ALL BRANCH CIRCUITRY CONDUITS WITH TWO LOCKNUTS, ONE INSIDE AND ONE OUTSIDE OF ALL BOXES, CABINETS AND GUTTERS FOR RIGID CONDUIT. ONE LOCKNUT INSIDE OF ALL BOXES, CABINETS, AND GUTTERS FOR EMT.
- AA. INSTALL BOXES IN ACCORDANCE WITH NECA "STANDARD OF INSTALLATION."
- BB. SET WALL MOUNTED BOXES AT ELEVATION TO ACCOMMODATE MOUNTING HEIGHTS INDICATED OR AS REQUIRED FOR SPECIFIC PROJECT REQUIREMENTS.
- CC. INACCESSIBLE CEILING AREAS: INSTALL OUTLET AND JUNCTION BOXES NO MORE THAN 6 INCHES FROM CEILING ACCESS PANEL OR FROM REMOVABLE RECESSED LUMINAIRE.
- DD. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF OUTLETS MOUNTED ABOVE COUNTERS, BENCHES, AND BACKSPASHES OR FOR HVAC WINDOW UNITS.
- EE. LOCATE OUTLET BOXES TO ALLOW LUMINARIES POSITIONED AS INDICATED ON DRAWINGS.
- FF. DO NOT INSTALL FLUSH MOUNTING BOX BACK-TO-BACK IN WALLS; PROVIDE MINIMUM 6 INCHES SEPARATION.
- GG. SECURE FLUSH MOUNTING BOX TO INTERIOR WALL AND PARTITION STUDS. ACCURATELY POSITION TO ALLOW FOR SURFACE FINISH THICKNESS.
- HH. USE APPROVED STAMPED STEEL BRACKETS TO FASTEN FLUSH MOUNTING OUTLET BOX BETWEEN STUDS.
- II. INSTALL FLUSH MOUNTING BOX WITHOUT DAMAGING WALL INSULATION OR REDUCING ITS EFFECTIVENESS.
- JJ. USE APPROVED ADJUSTABLE STEEL CHANNEL FASTENERS SPANNING JOIST FOR HUNG CEILING OUTLET BOX.
- KK. DO NOT FASTEN BOXES TO CEILING SUPPORT WIRES.
- LL. SUPPORT BOXES INDEPENDENTLY OF CONDUIT.

END OF SECTION 16000

THE LANE GROUP



GRAYSON COUNTY RESTROOM BUILDING INDEPENDENCE, VIRGINIA

ELECTRICAL SPECIFICATIONS

DATE: OCTOBER 9, 2015

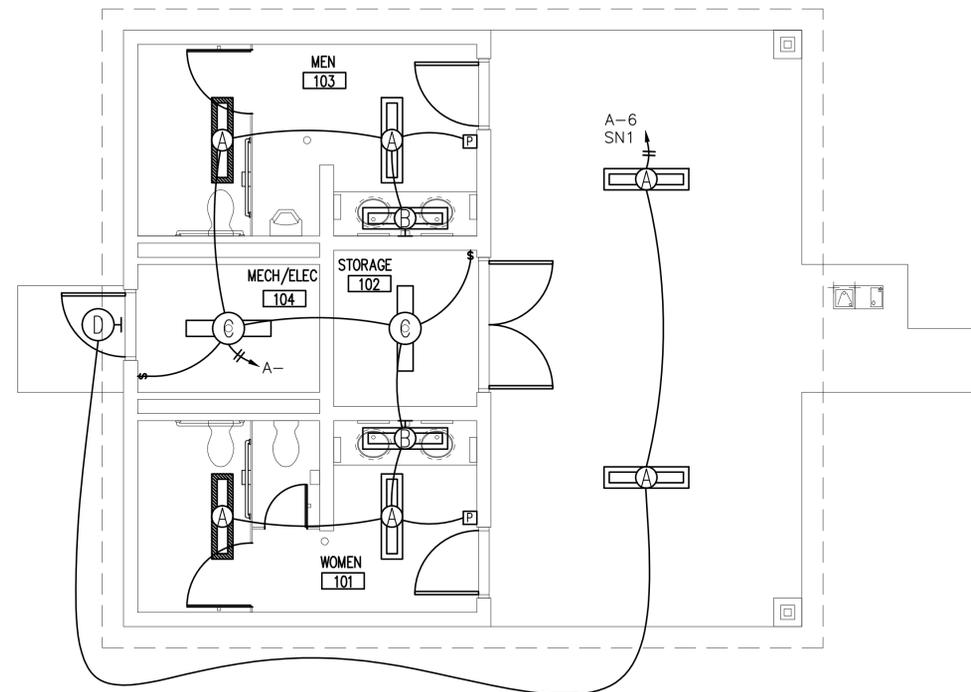
NO.	REVISION

SHEET:

E002

TLG PROJECT #13013

THE LANE GROUP © 2015



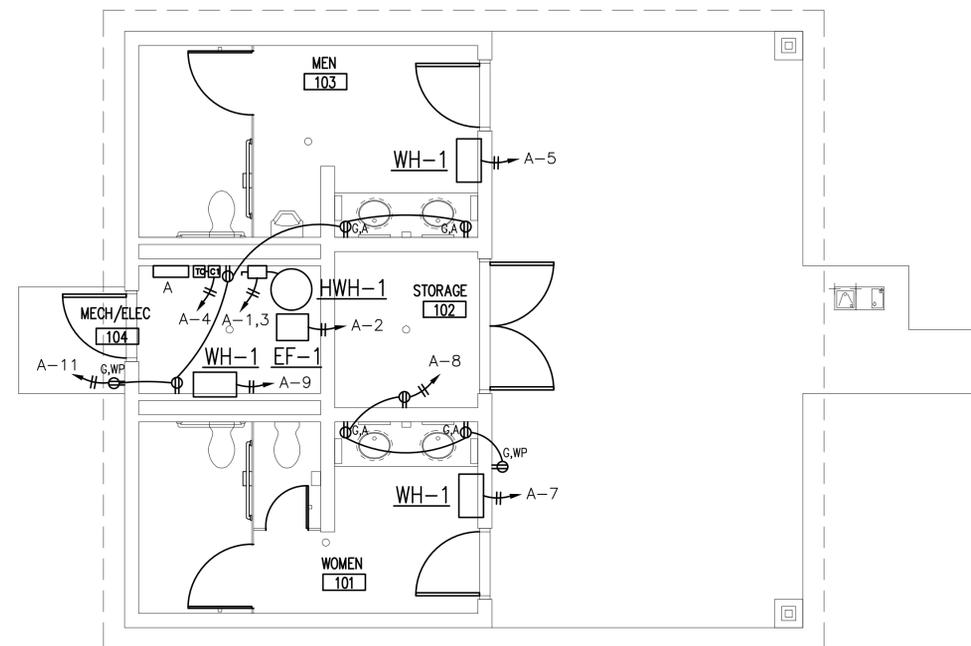
LIGHTING SHEET NOTES:

SN1 TO LIGHTING CIRCUIT, ROUTE THROUGH LIGHTING CONTACTOR.

SN2 OCCUPANCY SENSOR SHALL BE SUITABLE FOR USE IN WET LOCATIONS.

LIGHTING PLAN - GRAYSON COUNTY RESTROOM BUILDING

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



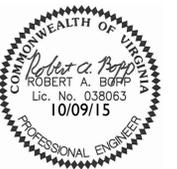
POWER SHEET NOTES:

SN1 EXTERIOR RECEPTACLES SHALL BE FLUSH MOUNTED.

SN2 EXHAUST FAN AND WALL HEATERS WILL BE SUPPLIED WITH INTEGRAL DISCONNECT.

POWER PLAN - GRAYSON COUNTY RESTROOM BUILDING

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



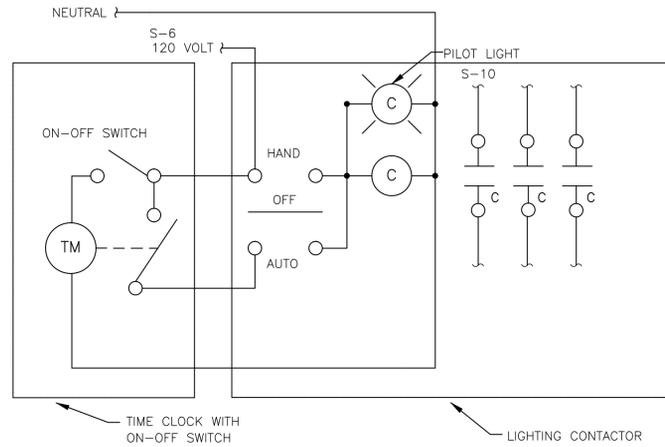
DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

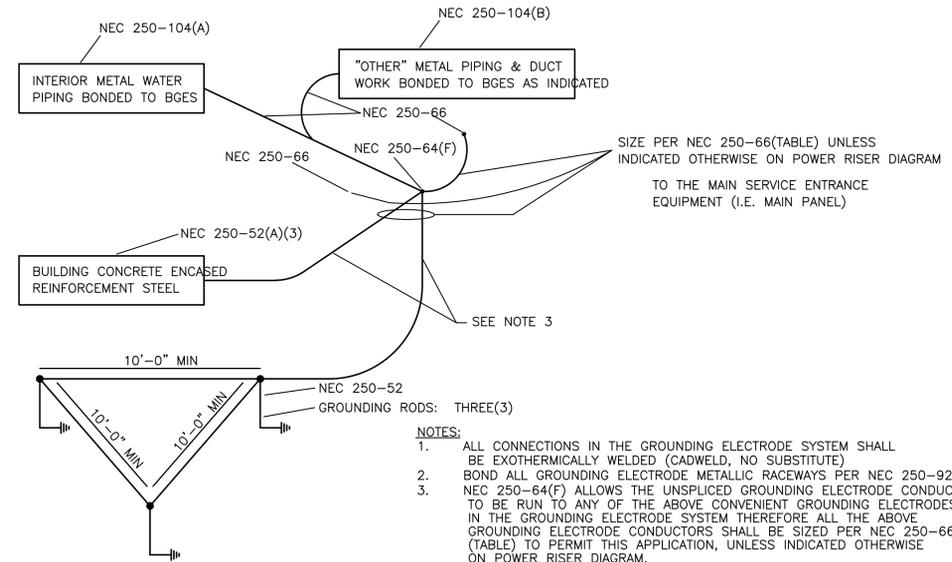
E101

TLG PROJECT #13013



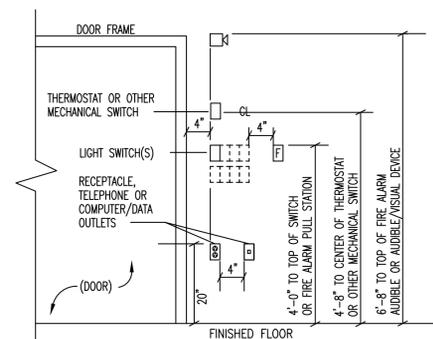
LIGHTING TIME CLOCK—ASTROMOMICAL DIAL, AUTOMATICALLY ADJUSTS FOR DAYLIGHT SAVINGS TIME, OFF SUNRISE, ON SUNSET. 120 VOLT, CONTACTS, ELECTRONIC, BATTERY BACKUP EQUAL TO INTERMATIC ET8115.

OUTDOOR LIGHTING CONTROL WITH TIME CLOCK
NTS



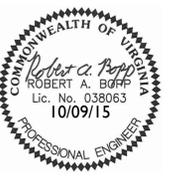
NOTES:
1. ALL CONNECTIONS IN THE GROUNDING ELECTRODE SYSTEM SHALL BE EXOTHERMICALLY WELDED (CADWELD, NO SUBSTITUTE)
2. BOND ALL GROUNDING ELECTRODE METALLIC RACEWAYS PER NEC 250-92.
3. NEC 250-64(F) ALLOWS THE UNSPLICED GROUNDING ELECTRODE CONDUCTOR TO BE RUN TO ANY OF THE ABOVE CONVENIENT GROUNDING ELECTRODES IN THE GROUNDING ELECTRODE SYSTEM THEREFORE ALL THE ABOVE GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED PER NEC 250-66 (TABLE) TO PERMIT THIS APPLICATION, UNLESS INDICATED OTHERWISE ON POWER RISER DIAGRAM.

BUILDING GROUNDING ELECTRODE SYSTEM (BGES)
SCHEMATIC



NOTES:
1. WHERE MULTIPLE SWITCHES ARE USED, PROVIDE MULTIPLE GANG BOXES AS REQUIRED UP TO SIX GANGS. FOR GREATER NUMBER OF SWITCHES OR LIGHT CONTROL DIMMERS, USE ADDITIONAL RIMS AT 8" LOWER HEIGHT. DIVIDE MULTIPLE SWITCHES EVENLY, FOR MATCHING BOX GANGS.
2. FOR DIMMER, DERATE AND PROVIDE SPACING AS RECOMMENDED BY THE MANUFACTURER.
3. RECEPTACLES AND OTHER OUTLETS SHALL ALIGN VERTICALLY WITH LIGHT SWITCHES AND OTHER DEVICES MOUNTED ABOVE.
4. RECEPTACLES SHOWN AT 48" HEIGHT MAY BE INCORPORATED INTO SAME SWITCHPLATE WITH LIGHT SWITCH. PROVIDE DIVIDERS FOR DISSIMILAR VOLTAGES WHERE THIS IS DONE.
5. RECEPTACLES AND OTHER OUTLETS AT SAME ELEVATION SHOWN SIDE BY SIDE ON PLANS SHALL BE MOUNTED 4" APART IN WALL UNLESS OTHERWISE REQUIRED BY FIRE ASSEMBLY DETAILS.
6. RECEPTACLES AND OTHER OUTLETS MAY BE COMBINED INTO A COMMON BOX WITH COMMON SWITCHPLATE. PROVIDE DIVIDERS BETWEEN BOX SECTIONS AND PROVIDE INDIVIDUAL CONDUITS FOR EACH SYSTEM INCORPORATED.

DETAIL — TYPICAL OUTLET BOX ELEVATIONS
NO SCALE



DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

E201

TLG PROJECT #13013

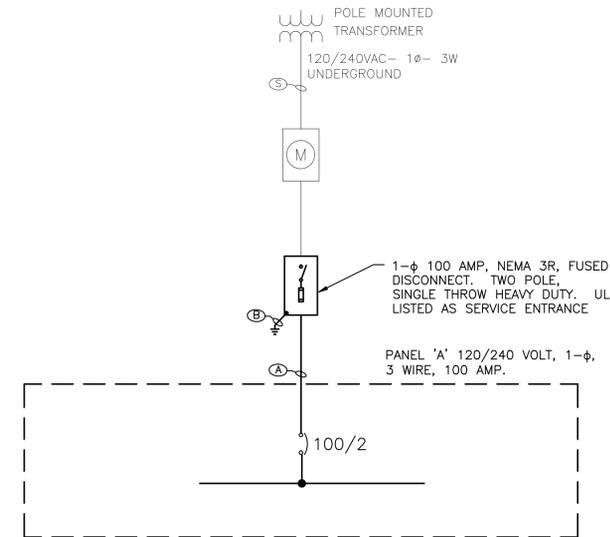
LIGHT FIXTURE SCHEDULE									
MARK	MANUFACTURING MODEL NO.	INPUT VOLTAGE	LAMPS			TOTAL WATTS	MNTG.	REMARKS	
			NO.	WATTAGE	TYPE				
A	LITHONIA -WRT F 2 32 A12125 MVOLT GEB10IS	120	2	32	FLUOR T-8	64	REC	1'x4' RECESSED WET LOCATION TROFFER, FLANGE MOUNT, ELECTRONIC BALLAST, EMERGENCY BALLAST WHERE INDICATED ON PLANS.	
B	NEW STAR-VIC4N 1 32 1 RW 12 WH TH	120	1	32	FLUOR T-8	32	WALL	6"x2' VANDAL RESISTANT ARCHITECTURAL LINEAR LUMINAIRE. WET LOCATION LISTED, WHITE POLYCARBONATE RIBBED LENS. ALUMINUM FRAME AND END CAPS. TAMPER RESISTANT SCREWS. MOUNT ABOVE MIRROR	
C	LITHONIA -Z 2 32 MVOLT GEB10IS	MVOLT	2	32	FLUOR T-8	64	PEND	1'x4' FLUORESCENT GENERAL PURPOSE STRIP LIGHT.	
D	LITHONIA WSR LED 1 10A700/30K SR4 MVOLT DDBXD	MVOLT	1	24	LED	24	SURF	EXTERIOR AREA LIGHT. 1/8" TEMPERED GLASS LENS. DARK BRONZE FINISH. MOUNTING HEIGHT-8'.	

FEEDER SCHEDULE				
MARK	SETS	CONDUCTOR	CONDUIT	AMPACITY
S	2	BY GRAYSON COUNTY	-	-
A	1	4#2 THWN COPPER, 1#8 EGC.	1 1/2"	110
B	1	#6 COPPER GEC	--	--
C	-	-	-	-

Rating	120/240	Bus Rating	100	PANEL DESIGNATION	A	NOTES:	EXISTING		
Phases	1	Lug Rating	100						
wires	3	Pole Spacing	30						
main breaker	MB	AIC Rating	22,000						
breaker rating	100	Mounting	SURF						
Load Served	WIRE SIZE	CB	CKT	VA/PHASE		CKT	CB	WIRE SIZE	Load Served
HWH-1	10	30/2	1	2250	2	20/1	12	12	EF-1
	10		3	49		2250	4		20/1
WH-1 MENS	12	20/1	5	1500	6	20/1	12	12	LIGHTING
WH-1 WOMENS	12	20/1	7	676	8	20/1	12	12	REC
WH-1 MECH/ELEC	12	20/1	9	1500	10				
REC	12	20/1	11		12				
			13		14				
			15		16				
			17		18				
			19		20				
			21		22				
			23		24				
			25		26				
			27		28				
			29		30				
TOTAL LOAD:			5975	5490					
amps/phase:			49.79	45.75					

PANEL A

DISCONNECT SWITCH SCHEDULE									
DEVICE	SWITCH VOLTAGE	PHASE	AMP	POLES	SW/FUSE	NEUTRAL BAR	GROUND BAR	NEMA ENCL.	REMARKS
☐	120/240	1	100	2	100	YES	YES	3R	SERVICE ENTRANCE
☐	240	1	30	2	-	NO	YES	1	HWH-1

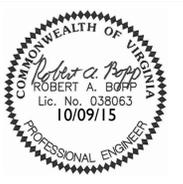


ELECTRICAL EQUIPMENT SCHEDULE

- PANELBOARDS 120/240 VOLT, 1-φ, 3 WIRE SURFACE OR FLUSH MOUNTED. BRANCH CIRCUITS AND POLE SPACE AS SCHEDULED ON THE PLANS. PROVIDE SHORT CIRCUIT RATING AS NOTED IN THE SCHEDULES. EQUAL TO SQUARE D TYPE NOOD.
- LIGHTING CONTACTOR 4 POLE, ELECTRICALLY HELD LIGHTING CONTACTOR. 120 VOLT AC COIL, H-O-A SELECTOR, NEMA 1 ENCLOSURE, 20 AMP CONTACTS. EQUAL TO SQUARE-D LG40
- TIME CLOCK ASTRONOMICAL DIAL, AUTOMATICALLY ADJUSTS FOR DAYLIGHT SAVINGS TIME, OFF SUNRISE, ON SUNSET. 120 VOLT, CONTACTS, ELECTRONIC, BATTERY BACKUP. EQUAL TO INTERMATIC ETB115.

SHEET NOTES:

- SN1 SERVICE WILL BE INSTALLED BY GRAYSON COUNTY. ELECTRICAL CONTRACTOR IS NOT RESPONSIBLE FOR CONNECTION FROM METER TO DISCONNECT.
- SN2 ITEMS SHOWN LIGHT ARE BY OTHERS.



DATE: OCTOBER 9, 2015

NO.	REVISION

SHEET:

E301

TLG PROJECT #13013