


**CALL BEFORE YOU DIG!**  
PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR  
CONSTRUCTION PHASE AND 10 WORKING  
DAYS IN DESIGN STAGE - STOP CALL 8-1-1

 1-800-242-1776  
8-1-1 (WITHIN PA.)

CONTRACTOR NOTES:

THE CONTRACTOR IS RESPONSIBLE TO FULLY COMPLY WITH THE NOTES AND SPECIFICATIONS CONTAINED HEREIN. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS.

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE TO VERIFY THAT HE/SHE HAS THE LATEST EDITION OF THE SITE PLAN DOCUMENTS.
2. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR IS ALSO RESPONSIBLE TO ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED THE COMMENTS TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES AND CONFIRMED THAT ALL NECESSARY REQUIRED PERMITS HAVE BEEN OBTAINED. CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.
3. THE OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS/APPROVALS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
4. CONTRACTOR MUST REFER TO THE ARCHITECTURAL/BUILDING PLANS "OR RECORD" FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.
5. ALL DIMENSIONS SHOWN ON THE PLANS MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH HAS TO BE REDONE OR REPAIRED DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THE PLANS OR FOR CONFLICTS OR AMBIGUITIES. THE CONTRACTOR MUST OBTAIN WRITTEN NOTIFICATION OF SAME AND ENGINEER, THEREAFTER, PROVIDING CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.
6. THE CONTRACTOR, IN ADDITION TO OTHER NOTES PROVIDED WITHIN THE APPROVED PLANS, SHALL BE RESPONSIBLE FOR COMPLYING WITH THE LATEST OSHA STANDARDS AND REGULATIONS, OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES.
7. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION TO BE TAKEN IN ACCORDANCE WITH CURRENT OSHA STANDARDS AND ANY ADDITIONAL PRECAUTIONS TO BE PERFORMED TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES.
8. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN AS-BUILT RECORDS OF THE WORK.
9. THE CONTRACTOR SHALL ENSURE COMPLIANCE WITH ALL TERMS AND CONDITIONS SET FORTH IN THE APPROVALS AND PERMITS ISSUED BY MUNICIPAL, COUNTY, STATE AND FEDERAL AGENCIES RELATING TO THE WORK. THE CONTRACTOR, AT ITS SOLE EXPENSE, SHALL PROMPTLY CORRECT ALL VIOLATIONS REPORTED OR NOTED BY MUNICIPAL, COUNTY, STATE OR FEDERAL AGENCIES RELATING TO OR ARISING FROM CONTRACTORS OR ITS SUBCONTRACTORS FAILURE TO PERFORM THE WORK IN ACCORDANCE WITH THE TERMS AND CONDITIONS SET FORTH IN THE APPROVALS AND PERMITS.
10. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED THEREON, WITHOUT FIRST OBTAINING PRIOR WRITTEN AUTHORIZATION FOR SUCH DEVIATIONS FROM THE OWNER AND ENGINEER, IT SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS TO CORRECT ANY WORK DONE, ALL FINES OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ALL SUCH COSTS TO CORRECT ANY SUCH WORK AND FROM ALL SUCH FINES AND PENALTIES, COMPENSATION AND PUNITIVE DAMAGES AND COSTS OF ANY NATURE RESULTING THEREFROM.
11. IT IS THE POLICY OF THE CONTRACTOR TO EXERCISE EXTREME CARE WHEN PERFORMING ANY WORK ADJACENT TO PAVEMENT, STRUCTURES, ETC. INTENDED TO REMAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION AND STABILITY OF STRUCTURES, SIDEWALKS, PAVEMENT, AND ANY OTHER IMPROVEMENTS TO REMAIN ON THE PROPERTY, AND TO PROVIDE A SAFE WORK AREA.
12. ALL CONTRACTORS MUST SUBMIT TO THE OWNER EVIDENCE OF HAVING ALL APPROPRIATE INSURANCE COVERAGE. ALL CONTRACTORS MUST HAVE THEIR "CERTIFICATE OF INSURANCE POLICIES" ENDORSED TO NAME IN ADDITION TO THE OWNER, CONTRACTOR ENGINEERING ASSOCIATES, INC. AS ADDITIONAL INSURED AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE THE HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED BY THE CONTRACTOR. ALL CONTRACTORS MUST FURNISH OWNER AND ENGINEER WITH CERTIFICATIONS OF INSURANCE AS EVIDENCE OF THE REQUIRED COVERAGE. THE CONTRACTOR SHALL MAINTAIN AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION. IN ADDITION, ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY THE LAW, INDEMNIFY AND HOLD HARMLESS THE OWNER AND CONTRACTOR ENGINEERING, INC. FROM AND AGAINST ANY DAMAGES, LIABILITIES OR COSTS, INCLUDING REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS.
13. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOBSITE SAFETY.
14. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND PROTECTION OF TRAFFIC PLAN FOR ALL WORK THAT AFFECTS OR MAY AFFECT TRAFFIC, EITHER IN THE R.O.W. OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE.
15. NEITHER THE PROFESSIONAL ACTIVITIES OF ENGINEER NOR THE PRESENCE OF ENGINEER OR ITS EMPLOYEES AT A CONSTRUCTION/PROJECT SITE, SHALL RELIEVE THE CONTRACTOR OF ITS OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERVISING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. ENGINEER AND ITS PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY OR ANY CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PROGRAMS OR PROCEDURES.
16. THE ENGINEER WILL REVIEW AND ACCEPT OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN CONCEPT AND THE INFORMATION SHOWN, NOT CONSTRUCTION MEANS OR METHODS, COORDINATION OF THE WORK WITH OTHER TRADES, OR CONSTRUCTION SAFETY PRECAUTIONS, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE ENGINEER SHALL NOT BE REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR FOR WHICH THE ENGINEER'S REVIEW IS NOT FEASIBLE FOR CONSTRUCTION METHODS / MEANS FOR COMPLETION OF THE WORK.
17. THE OWNER AND ENGINEER'S CONSTRUCTION / SCOPE REVISIONS WHICH RESULT FROM THE SAME, THE CONTRACTOR IS RESPONSIBLE TO PROMPTLY NOTIFY OWNER AND ENGINEER.
18. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROMPTLY NOTIFY OWNER AND ENGINEER, IN WRITING, WHEN A CONFLICT IS IDENTIFIED.

1. CONCRETE FOOTING SHALL BE PADOT CLASS "A" CONCRETE, 3,300 PSI.
2. INSTALLATION OF CHAIN LINK FENCING AND GATES SHALL BE IN ACCORDANCE WITH ASTM F567, LATEST EDITION.
3. FENCE POSTS SHALL MEET ASTM-1043, GROUP IC, MIN. Fy= 50,000 PSI WITH TYPE D I.D. COATING AND TYPE B O.D. COATING.
4. IF CHAIN LINK FABRIC MESH HAS A PVC COLOR COATING, THEN ALL POSTS SHALL HAVE A POLYESTER COLOR COATING TO MATCH FABRIC COLOR.
5. POSTS SHALL BE SPACED EQUIDISTANT NOT EXCEEDING 10 FEET.
6. SWING GATE POST FOOTING DEPTHS AND DIAMETERS SHALL BE IN ACCORDANCE WITH TABLE 2 OF ASTM F567, LATEST EDITION.

2-3/8" O.D. >6" HIGH  
2-3/8" O.D. >8" HIGH

FINISH GRADE

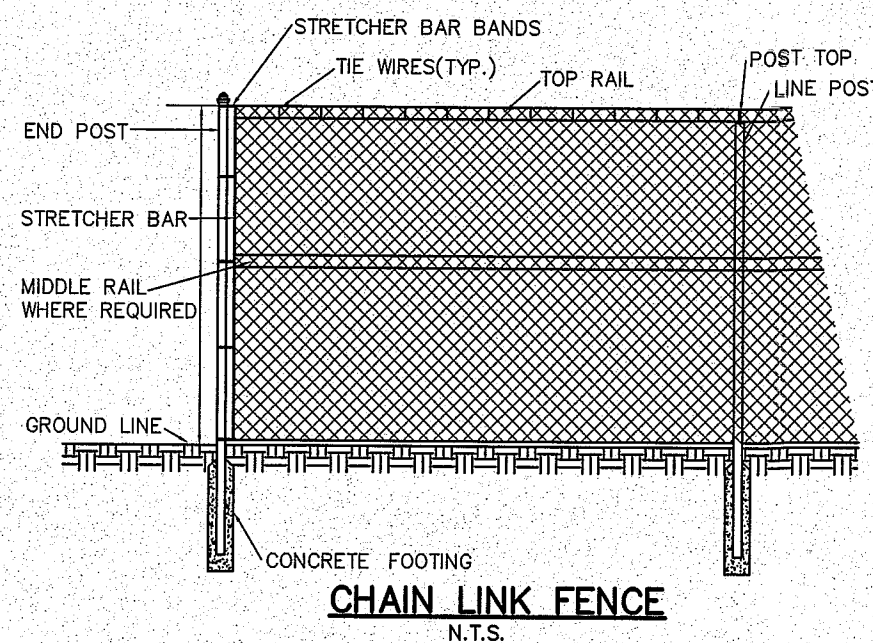
FTG.  
FTG.  
FTG.  
FTG.

4" HEIGHT = 24" FTG. DEPTH  
6" HEIGHT = 30" FTG. DEPTH  
8" HEIGHT = 36" FTG. DEPTH  
10" HEIGHT = 42" FTG. DEPTH

10"

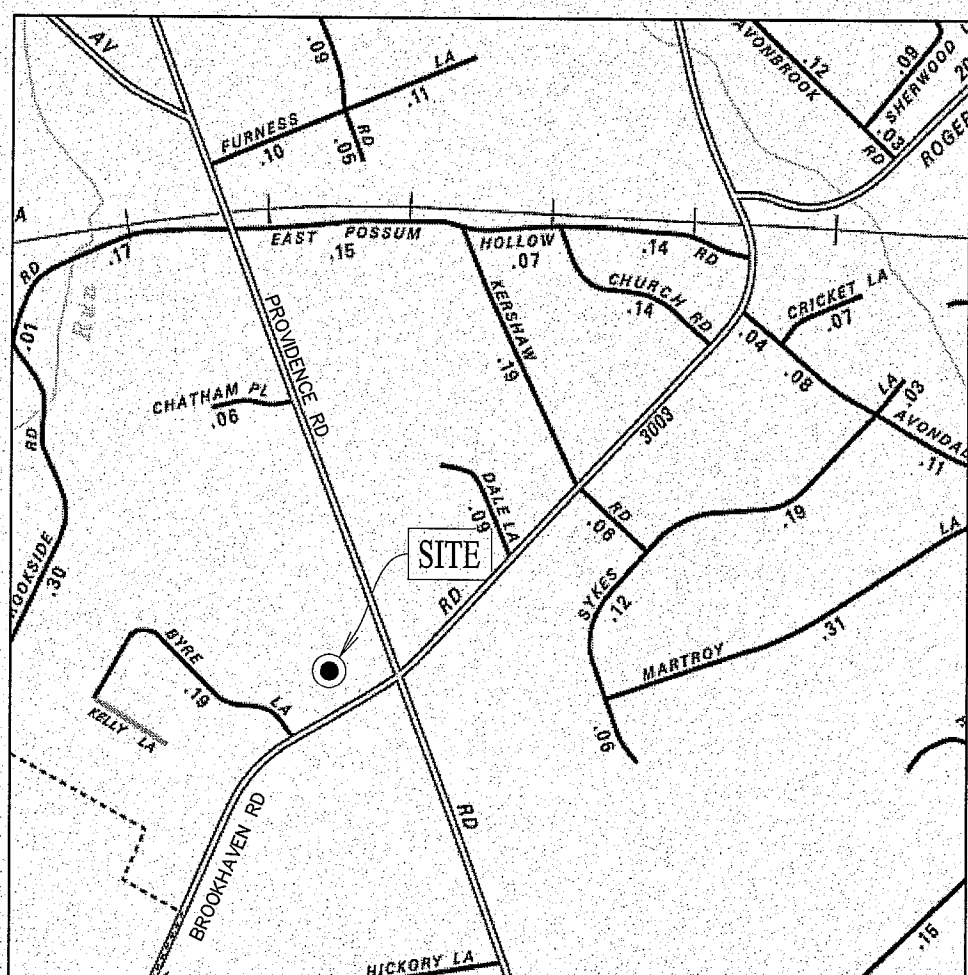
12"

CHAIN LINK FENCE POST FOOTING  
N.T.S.



Me - MADE LAND SCHIST & GNEISS MATERIALS

1. ALL EXISTING FEATURES AND PROPOSED DIMENSIONS SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR MUST NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ADDITIONAL WORK DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF WRITTEN NOTIFICATION HAS NOT BEEN GIVEN TO THE ENGINEER.
2. THIS DRAWING INDICATES THE APPROXIMATE LOCATION OF EXISTING SUBSURFACE UTILITIES IN THE VICINITY OF THE PROPERTY BASED ON AVAILABLE DATA AND ARE NOT GUARANTEED FOR LOCATION AND/OR COMPLETENESS. THERE IS NO EXPRESSED OR IMPLIED AGREEMENT THAT UTILITY LOCATION, SIZE, DEPTH, ETC. EXIST OR ACCURATE. UTILITY INFORMATION SHOWN SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING THE SIZE, DEPTH AND LOCATION OF ALL UTILITIES IN ADVANCE OF ANY EXCAVATION OR BORING WORK. PA ACT 187 REQUIRES THAT CONTRACTORS CALL 811 OR 1-800-243-1770 BEFORE PERFORMING ANY EXCAVATION. ANY UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE IMMEDIATELY REPAIRED AT THE CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL 'MEANS AND METHODS' NECESSARY TO PREVENT SETTLEMENT, MOVEMENT, DAMAGES, OR COLLAPSE OF EXISTING STRUCTURES, UTILITIES, OR OTHER EXISTING IMPROVEMENTS INTENDED TO REMAIN BOTH ON OR OFF SITE.
4. ALL EXISTING CURB DAMAGED OR REMOVED DURING CONSTRUCTION OPERATIONS SHALL BE REPLACED WITH NEW CONCRETE CURB. PROVIDE NEW CURB WITH SIX INCH (6") REVEAL WHEREVER IT CAN BE INSTALLED WITHOUT BACKING-UP RUNOFF FROM THE SIDEWALK AREAS. THE NEW CURB SHALL TIE-IN INTO EXISTING CURB WITH MATCHING CURB REVEAL. IF DEPRESSED CURB ARE PROPOSED AT DRIVEWAYS, THERE SHALL BE A MAXIMUM 1/8 INCH CURB REVEAL.
5. ALL STREET RESTORATION SHALL BE BASED ON THE TRENCH RESTORATION DETAIL SHOWN ON THE PLANS.
6. DEBRIS SHALL NOT BE BURIED ON THIS SITE/PROPERTY. ALL EXCAVATED MATERIAL AND DEBRIS (SOLID WASTE) SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS AND APPLICABLE CODES. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROPERLY REMOVE AND DISPOSE OF HAZARDOUS/UNSATURABLE MATERIAL, OFF-SITE AT AN APPROVED FACILITY IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS AND APPLICABLE CODES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INSPECTIONS, ETC. REQUIRED BY ALL GOVERNING JURISDICTIONAL AGENCIES BOTH DURING AND AFTER CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR JOB CLOSE-OUT AND ISSUANCE OF CERTIFICATE OF OCCUPANCY UNLESS DIRECTED OTHERWISE BY THE OWNER.
8. ALL WORK SHALL BE PERFORMED WITHIN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS, REFERENCED DOCUMENTS, AND THE REQUIREMENTS/STANDARDS OF ALL FEDERAL, STATE, AND LOCAL GOVERNING AUTHORITY.
9. CATANEA ENGINEERING ASSOCIATES, INC. AND THEIR EMPLOYEES (CEA) ARE NOT RESPONSIBLE FOR THE CONSTRUCTION METHADONE WORK FOR COMPLETING THE WORK SHOWN ON THESE PLANS NOR ANY REVISIONS WHICH RESULT FROM SUCH SAME. CEA IS ALSO THE RESPONSIBLE FOR JOB SAFETY, NOR HAVE THEY BEEN RETAINED FOR SUCH SERVICES/PURPOSES.
12. ALL CONCRETE SLAB ON GRADE CONSTRUCTED IN THE PAVED AREAS SHALL HAVE CORNERS CHAMFERED 45". ALL SLAB ON GRADE CONCRETE SIDEWALK, WALKWAYS, PADS, ETC. SHALL BE PADOT CLASS 'A', 3,350 PSI AIR-ENTRAINED CONCRETE.
13. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS BY LINN ARCHITECTS FOR BUILDING AND MEP PLANS BY ADVANCE ENGINEERING.



SCALE: 1" = 700 ft

1. BOUNDARY, TOPOGRAPHIC AND PHYSICAL IMPROVEMENTS SHOWN IS/ARE FROM FIELD SURVEY BY CATANIA ENGINEERING ASSOCIATES, INC. PERFORMED ON 5/02/2022.
2. CONTOURS PLOTTED FROM FIELD RUN TOPOGRAPHIC SURVEY BY CATANIA ENGINEERING ASSOCIATES, INC. DATUM: ASSUMED. SITE BENCH IS A MANHOLE IN W. BROOKHAVEN ROAD WITH A RIM ELEVATION= 98.80.
3. UNDERGROUND UTILITIES SHOWN WERE PLOTTED FROM OBSERVABLE EVIDENCE AT THE TIME OF SURVEY AND INFORMATION FROM PLANS SUPPLIED BY UTILITY COMPANIES. NO GUARANTEES IS MADE THAT UNDERGROUND UTILITIES ARE ACCURATELY OR COMPLETELY SHOWN HEREON.
4. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT, WHICH WOULD DISCLOSE ANY RIGHTS, RESERVATIONS, EASEMENTS, ETC., OF RECORD.
5. ZONING INFORMATION OBTAINED FROM TOWNSHIP ZONING ORDINANCE (AS POSTED ON THE TOWNSHIP WEBSITE) AT TIME OF SURVEY. PROJECT ENGINEER IS RESPONSIBLE FOR CHECKING LATEST TOWNSHIP ORDINANCES FOR ANY & ALL UPDATES OR TOWNSHIP REVISIONS.
6. THIS PROPERTY IS LOCATED WITHIN FLOOD HAZARD ZONE 'X' AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP FOR DELAWARE COUNTY, PA. MAP NO. 420450094F, DATED NOVEMBER 18, 2009.
7. SOILS INFORMATION PROVIDED WITH SUPPORT FROM THE NATURAL RESOURCES CONSERVATION SERVICE. SOILS ATTRIBUTE DATA IS SERVED FROM THE NRCS SOIL DATA MART.
8. ALL CONCRETE SLAB ON GRADE CONSTRUCTED IN THE PAVED AREAS SHALL HAVE CORNERS CHAMFERED 45°. ALL SLAB ON GRADE CONCRETE SIDEWALK, WALKWAYS, PADS, ETC. SHALL BE PADDOT CLASS 'A', 3,350 PSI AIR-ENTRAINED CONCRETE.
9. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS BY LINN ARCHITECTS FOR BUILDING AND MEP PLANS BY ADVANCE ENGINEERING.

**EXISTING**

CONTOURS

SPOT ELEVATIONS

SANITARY SEWER

SANITARY LATERAL

STORM SEWER

GAS MAIN

WATER MAIN

UNDERGROUND ELECTRIC

**PROPOSED**

350.0'

350.0'

350.0'

NETHER PROVIDENCE TOWNSHIP  
214 SYKES LANE  
WALLINGFORD, PA 19086  
PARID #34-00-00390-01  
DEED 12-24-1984  
AREA = 57,017 S.F. (GROSS)  
53,520 S.F. (NET)

INFORMATION SHOWN ON THIS PLAN IS THE RESULT OF PROFESSIONAL SERVICES AS RENDERED BY CATANIA ENGINEERING ASSOCIATES, INC. REPRODUCTION OF THIS PLAN FOR THE PURPOSE OF CREATING ADDITIONAL COPIES OR REVISING PLAN WITHOUT APPROVAL OF CATANIA ENGINEERING ASSOCIATES, INC. IS PROHIBITED. CERTIFICATION FOR THE WORK CONTAINED HEREIN IS LIMITED TO THE CITY FOR WHICH THE WORK WAS PERFORMED, AS OF THE DATE SHOWN ON THE PLAN.								
2	03-29-2023	ISSUE FOR BID	AHR	AHR				
1	02-27-2023	PAADOT FOR	AHR	AHR				
NO.	DATE	REVISION	DWN.	BY	CKO.	BY		



CATANIA ENGINEERING ASSOCIATES, INC.  
520 WEST MacDADE BLVD.  
MILMONT PARK, PA. 19033  
TEL. (610) 532-2884  
FAX. (610) 532-2923  
EMAIL: [office10@cataniaengineering.com](mailto:office10@cataniaengineering.com)

SITE PLAN – BASE BID  
RECYCLING CENTER  
NETHER PROVIDENCE TOWNSHIP

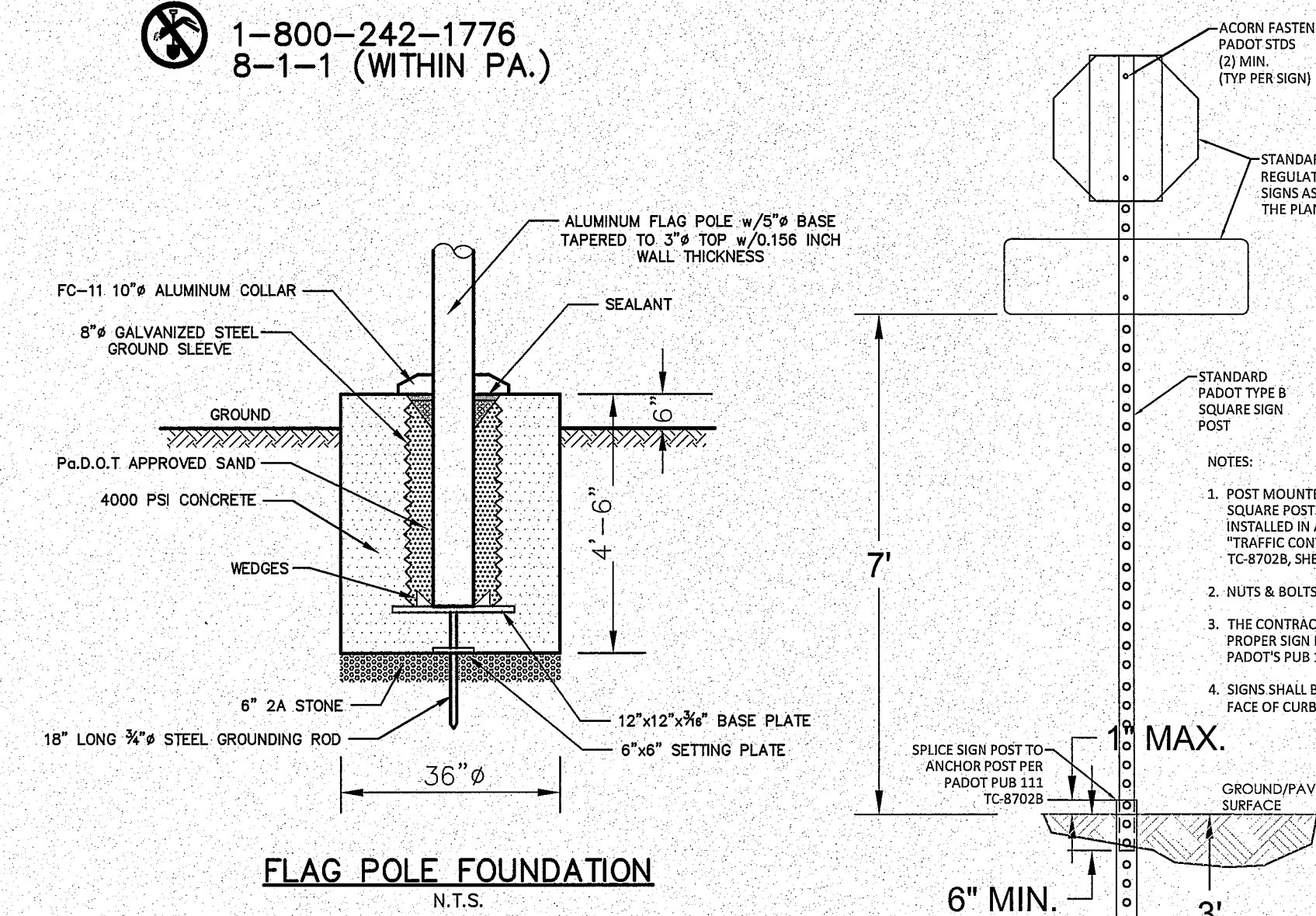
CAUTION: TO INSURE VALIDITY OF PLAN REGISTRATION SEAL MUST BE IN RED INK.		TOWNSHIP OF NETHER PROVIDENCE		DELAWARE COUNTY, PA	
DWN. BY	AHR	DSG. BY		FIELD BOOK/PAGE	
CKD. BY	C.J.C.			SCALE	1" = 10'
				DATE	11/15/22
				DRAWING NO.	83250-109G
				SHEET	1 OF 9 SHEETS

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3 WORKING DAYS NOTICE FOR  
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DAYS IN DESIGN STAGE – STOP CALL 8-1-1

Pennsylvania One Call System, Inc.

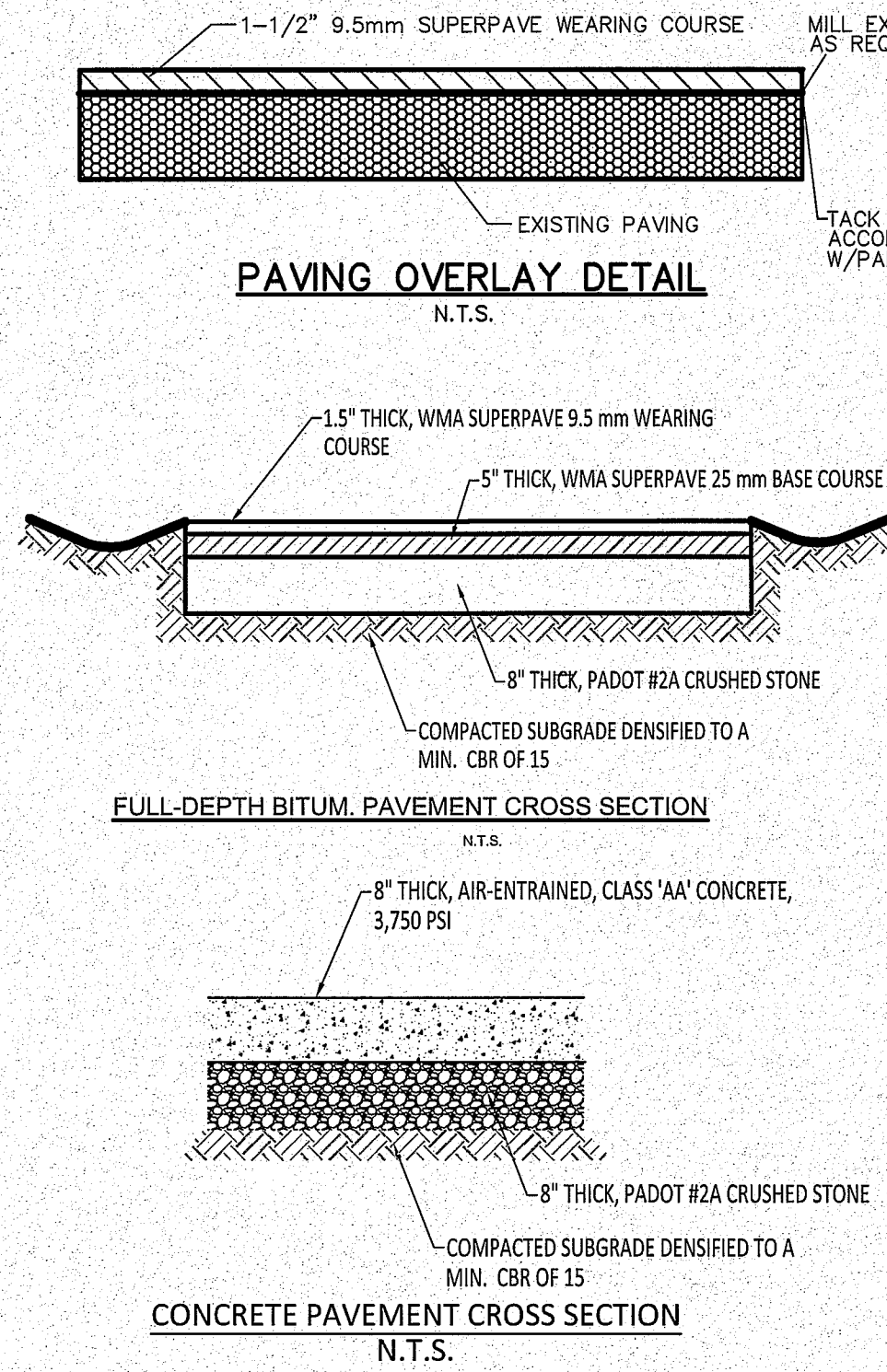
**1-800-242-1776**  
**8-1-1 (WITHIN PA.)**

THE LOCATIONS OF ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE  
VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR  
SHALL CONTACT PA ONE-CALL AT 811 AT LEAST 3 DAYS BEFORE PROCEEDING WITH ANY  
EXCAVATION. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ACCURATE FIELD  
LOCATIONS OF ALL EXISTING UNDERGROUND AND AERIAL UTILITIES FROM BOTH THE UTILITY  
COMPANIES AND/OR BY TEST PIT'S PRIOR TO BEGINNING WORK. ALL UTILITY SERVICES WITHIN  
THE LIMITS OF WORK MUST ALSO BE FIELD LOCATED PRIOR TO EXCAVATION WORK.  
CONTRACTORS ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE  
PLAN INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO TAKE ALL PREVENTIVE  
MEASURES TO PROTECT THE LINES IN ACCORDANCE WITH THE PA ONE-CALL ACT.



MEASUREMENT & PAYMENT FOR ADD ALTERNATIVE BID:

1. PROPOSED UNDERGROUND UTILITY SERVICES NEED TO BE INSTALLED AND ACCEPTED BY THE OWNER BEFORE PAVEMENT AND A PADOT HOP PERMIT IS REQUIRED BEFORE THE ADD ALTERNATIVE BID ITEM IS INSTALLED.
2. CONTRACTOR SHALL COORDINATE WITH MUNICIPALITY AND RELOCATE RECYCLE BINS TO A TEMPORARY LOCATION ON-SITE. AFTER NEW RECYCLING PAD IS IN PLACE, THE CONTRACTOR SHALL RELOCATE CONCRETE BLOCKS FROM RECYCLE BIN AREA TO AN AREA ON-SITE PER MUNICIPAL DIRECTION.
3. CONTRACTOR SHALL MAINTAIN DRIVEWAY ACCESS TO SITE DURING ENTIRE CONSTRUCTION OPERATION.
4. EXCAVATION IS UNCLASSIFIED.
5. THE LUMP SUM BID FOR ADD ALTERNATIVE SITE PLAN IMPROVEMENTS SHOWN ON THIS PLAN WILL INCLUDE, BUT SHALL NOT BE LIMITED TO, FIELD ENGINEERING, SITE LAYOUT, SURVEYING, EXCAVATION, SAW CUTTING ASPHALT/CONCRETE, REMOVAL & DISPOSAL OF BITUMINOUS ASPHALT/CONCRETE, DE-WATERING, EROSION CONTROL MEASURES, ROUGH GRADING, FINE GRADING, RESETTING VALVE COVERS/GRATES TO FINISH GRADES, HAULING/REMOVAL OF POOR/UNSUITABLE OR EXCAVATED MATERIALS, OVER EXCAVATION AND INSTALLING CRUSHED STONE BACKFILL IF POOR/UNSUITABLE SUBGRADE MATERIAL IS ENCOUNTERED, STOCKPILING, INSTALLING & COMPACTING CRUSHED STONE BASE, INSTALLING CONCRETE PADS, CONCRETE FORMWORK, CONCRETE CURING, INSTALLING AND COMPACTING BITUMINOUS ASPHALT BASED/BINDER & WEARING COURSE, SEAL COATING ALL EDGES/JOINTS, PAVEMENT MARKINGS, SIGN INSTALLATION, TRAFFIC CONTROLS, MAINTAINING DRIVEWAY ACCESS, INSTALLING TEMPORARY DRIVEWAY ACCESS IF NECESSARY, FENCE REMOVAL, TEMPORARY FENCING, PERMANENT FENCE AND GATE INSTALLATION, TOPSOIL INSTALLATION, TEMPORARY AND PERMANENT SEEDING, MILLING AND OVERLAY OF BITUMINOUS WEARING COURSE, AND ANY INCIDENTAL ITEMS THERETO AS REQUIRED TO INSTALL THE IMPROVEMENTS AS SHOWN ON THESE PLANS.

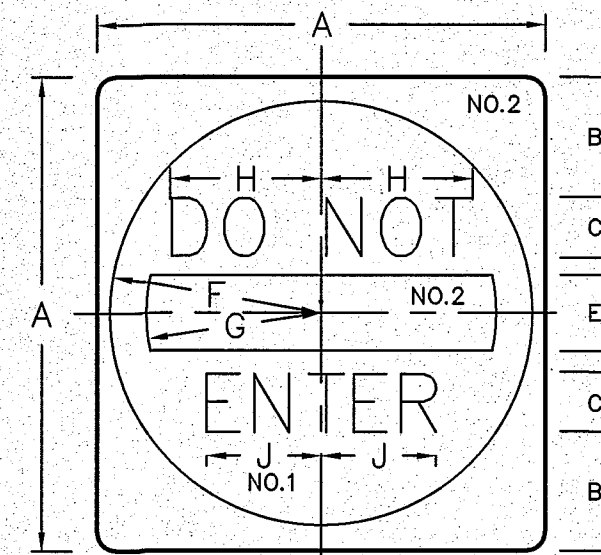


MAINTENANCE & PROTECTION OF TRAFFIC (MPT) NOTES:

1. THIS WORK CONSISTS OF THE MAINTENANCE AND PROTECTION OF TRAFFIC AND THE PROTECTION OF THE PUBLIC WHEN APPROACHING AND DEPARTING THE CONSTRUCTION AREA AND WITHIN THE LIMITS OF CONSTRUCTION.
2. FURNISH, ERECT, PLACE AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES. MAINTAIN TRAFFIC DURING HOURS OF CONSTRUCTION AND AT ALL OTHER TIMES CONSISTENT WITH THE METHODS INDICATED ON THESE DRAWINGS AND THE FOLLOWING:  
PENNDOT PUBLICATION 35;  
PENNDOT PUBLICATION 46;  
PENNDOT PUBLICATION 72M;  
PENNDOT PUBLICATION 111;  
PENNDOT PUBLICATION 212;  
PENNDOT PUBLICATION 213;  
PENNDOT PUBLICATION 236;  
PENNDOT PUBLICATION 408; AND  
MUTCD, CURRENT EDITION.
3. REMOVE THESE DEVICES IMMEDIATELY UPON COMPLETION OF THE WORK. PENNDOT WILL REMOVE ANY TRAFFIC CONTROL DEVICES ERECTED BY DEPARTMENT FORCES.
4. PERMITTEE MUST ARRANGE FOR INSPECTION OF ALL TRAFFIC CONTROL DEVICES PRIOR TO START OF WORK.
5. COVER OR REMOVE ALL CONFLICTING SIGNS AND ERADICATE ALL CONFLICTING PAVEMENT MARKINGS.
6. MOUNT ALL LONG-TERM ADVANCE WARNING SIGNS ON TYPE III BARRICADES UNLESS OTHERWISE NOTED OR INSTRUCTED BY DISTRICT OFFICE.
7. ALL SIGNS AND DEVICES TO BE MAINTAINED IN NEW OR LIKE NEW CONDITION. DRIVEWAYS WILL BE KEPT ACCESSIBLE AT ALL TIMES. LOCATE ALL SIGNS SO THAT SIGHT DISTANCES WILL NOT BE OBSTRUCTED AT DRIVEWAYS AND LOCAL ROADS.
8. ALL CHANNELIZING DEVICES, BARRICADES, AND SIGNS SHALL HAVE TYPE III OR BETTER PRISMATIC RETROREFLECTIVE SHEETING. SHEETING SHALL BE APPROVED AND LISTED IN PENNDOT PUBLICATION 35 (BULLETIN 15).
9. NO TRAFFIC RESTRICTIONS OR LANE CLOSURES ARE PERMITTED BETWEEN 6:00 AM AND 9:00 AM AND BETWEEN 6:00 PM AND 7:00 PM MONDAYS THROUGH FRIDAYS OR ON LEGAL HOLIDAYS AND WEEKENDS ASSOCIATED WITH LEGAL HOLIDAYS. ALL RESTRICTIONS AND CLOSURES ARE TO BE REMOVED BY NOON ON THE DAY PRIOR TO THE LEGAL HOLIDAY.
11. PERMITTEE SHALL NOTIFY LOCAL EMERGENCY AUTHORITIES (E.G., POLICE, FIRE, MEDICAL), AFFECTED BUSINESSES, SCHOOL DISTRICT(S), THE GENERAL PUBLIC, THE DISTRICT PERMIT MANAGER AND THE DISTRICT APRAIS COORDINATOR AT LEAST FOURTEEN DAYS PRIOR TO ANY SIGNIFICANT TRAFFIC IMPACTS (E.G., LATERAL WIDTH RESTRICTIONS LESS THAN 16 FEET, DETOURS).
12. MAINTENANCE AND PROTECTION OF TRAFFIC DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE PATA DRAWING(S):  
PATA 101-A,  
IN THE APRIL, 2022 VERSION OF PENNDOT PUBLICATION 213, 'TEMPORARY TRAFFIC CONTROL GUIDELINES'.
13. DROPPOFS CREATED BY CONSTRUCTION OPERATIONS SHALL BE TREATED CONSISTENT WITH PUBLICATION 408, SECTION 901.3(J).
14. REMOVE ALL SHORT-TERM WORK ZONE TRAFFIC CONTROL SIGNING UPON COMPLETION OF THAT DAY'S WORK PERIOD.
15. RESTRICTING TRAFFIC FLOW WITHIN THE WORK AREA SHALL BE MINIMIZED TO PREVENT TRAFFIC CONGESTION AND UNSAFE TRAFFIC CONDITIONS.
16. NOTIFY THE LOCAL MUNICIPALITY WHERE SIGNALIZED INTERSECTIONS FALL WITHIN THE WORK ZONE. DO NOT FLAG A SIGNALIZED INTERSECTION WITHOUT THE MUNICIPALITY PLACING THE SIGNAL ON FLASH.
17. THE CONTRACTOR SHALL COMPLY WITH ACT 229 OF DECEMBER 2002 DURING CONSTRUCTION ACTIVITIES WITHIN PENNDOT'S RIGHT-OF-WAY.

GENERAL HOP PERMIT NOTES:

1. THE EXISTING SPEED LIMIT POSTED ON BROOKHAVEN RD., S.R. 3003 IS **35 M.P.H.**
2. ALL WORK IN PA STATE HIGHWAY RIGHT-OF-WAY IS TO BE PERFORMED CONSISTENT WITH THE FOLLOWING:  
1. PENNDOT PUBLICATION 13M, DESIGN MANUAL PART 2 – HIGHWAY DESIGN  
2. PENNDOT PUBLICATION 34, APPROVED AGGREGATE PRODUCERS (BULLETIN 14)  
3. PENNDOT PUBLICATION 35, APPROVED CONSTRUCTION MATERIALS (BULLETIN 15)  
4. PENNDOT PUBLICATION 41, PRODUCERS OF BITUMINOUS MATERIALS (BULLETIN 41)  
5. PENNDOT PUBLICATION 42, PRODUCERS OF READY-MIX CONCRETE (BULLETIN 42)  
6. PENNDOT PUBLICATION 46, TRAFFIC ENGINEERING MANUAL  
7. PENNDOT PUBLICATION 72M, STANDARDS FOR ROADWAY CONSTRUCTION  
8. PENNDOT PUBLICATION 111, PAVEMENT MARKINGS AND SIGNING STANDARDS  
9. PENNDOT PUBLICATION 212, OFFICIAL TRAFFIC CONTROL DEVICES  
10. PENNDOT PUBLICATION 213, TEMPORARY TRAFFIC CONTROL GUIDELINES  
11. PENNDOT PUBLICATION 236, HANDBOOK OF APPROVED SIGNS  
12. PENNDOT PUBLICATION 408, SPECIFICATIONS
3. THE DRIVEWAY HAS BEEN DESIGNED CONSISTENT WITH TITLE 67, CHAPTER 441 REGULATIONS.
4. PERMITTEE IS RESPONSIBLE FOR MAINTENANCE OF ALL AUTHORIZED STRUCTURES, FACILITIES AND DRAINAGE.
5. PERMITTEE IS RESPONSIBLE FOR MAINTENANCE OF ALL AUTHORIZED SIGNS AND PAVEMENT MARKINGS.
6. THE CONTRACTOR MUST CONTACT PENNSYLVANIA ONE-CALL (1-800-242-1776) THREE WORKING DAYS BEFORE EXCAVATION OR DEMOLITION WORK. SERIAL NUMBER FOR NETHER PROVIDENCE TOWNSHIP.
7. ANTICIPATED AVERAGE DAILY TRAFFIC (ADT) FOR THE PROPOSED ACCESS IS CARS 200, SINGLE UNIT TRUCKS AND COMBINATIONS 45.
8. DISTANCE TO THE NEAREST INTERSECTION IS: 101' RIGHT, 346' LEFT.  
DISTANCE TO THE NEAREST TRAFFIC SIGNAL IS 346 FEET
9. THIS PERMIT MAY BE RESTRICTED ON WORKING HOURS AND TIMES FOR HOLIDAYS, WEEKENDS, AND SPECIAL OR UNFORESEEN EVENTS AND WILL REQUIRE APPROVAL FROM THE COUNTY OFFICE PRIOR TO WORKING DURING THESE PERIODS.
10. THE PERMITTEE'S CONTRACTOR SHALL SAWCUT AND REMOVE SHOULDER MATERIAL AS NECESSARY TO ENSURE THE PAVEMENT REPLACEMENT IS ADJACENT TO THE FULL-DEPTH PAVEMENT OF THE TRAVEL LANE.
11. FINAL APPROVAL OF THE PROPOSED SAWCUT WILL BE AT THE DISCRETION OF THE INSPECTOR-IN-CHARGE AND CAN BE CONSIDERED AS A CONDITION OF THE PERMITTEE'S CONTRACT. IF THE SAWCUT MUST BE LOCATED WITHIN A TRAVEL LANE, IT WILL BE NECESSARY TO MILL AND OVERLAY THE TRAVEL LANE TO PREVENT A JOINT IN A WHEEL PATH.
12. THE PROPOSED PAVEMENT SECTION MUST BE AS INDICATED ON THE PLAN, OR MATCH THE EXISTING AS FOUND IN THE FIELD, WHICHEVER IS GREATER.
13. PRIOR TO AN OVERLAY, BITUMINOUS OR CONCRETE BASE REPAIR OR JOINT REPLACEMENT MAY BE REQUIRED. REPAIR/REPLACEMENT WILL BE AT THE DISCRETION OF THE INSPECTOR-IN-CHARGE.
14. ALL EXISTING PAVEMENT MARKINGS WHICH ARE NO LONGER APPROPRIATE SHALL BE ERADICATED BY THE PERMITTEE. THE PERMITTEE SHALL PLACE ALL REQUIRED NEW PAVEMENT MARKINGS.
15. ALL PAVEMENT MARKINGS OTHER THAN LONGITUDINAL LINES TO BE HOT THERMOPLASTIC (PENNDOT PUBLICATION 111, TC-8600).
16. MATCH EXISTING PAVEMENT MARKINGS AT THE LIMITS OF WORK.
17. ALL PROPOSED PEDESTRIAN FACILITIES REFLECTED ON THESE PLANS, INCLUDING THOSE THAT ARE OUTSIDE OF PENNDOT'S RIGHT-OF-WAY, SHALL BE CONSTRUCTED TO COMPLY WITH THE REQUIREMENTS OF THE U.S. ACCESS BOARD, PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) OF THE ACCESSIBILITY GUIDELINES OF BUILDINGS AND FACILITIES (ADAAG). PENNDOT DESIGN MANUAL PART 2, CHAPTER 6, AND PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION (PENNDOT PUBLICATION 72M, RC-67M) PROVIDE GUIDANCE ON ADA ACCESSIBLE DESIGN FOR PEDESTRIAN FACILITIES AND CAN BE UTILIZED FOR REFERENCE.
18. ALL SLOPE MEASUREMENTS WILL BE INSPECTED/VERIFIED WITH A 2-FOOT SMART LEVEL.
19. IT IS THE RESPONSIBILITY OF THE PERMITTEE TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND NEW STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETION OF THE CONSTRUCTION.
20. MODIFICATIONS TO EXISTING DRAINAGE STRUCTURES MAY RESULT IN THE NEED TO REPLACE THE STRUCTURE. REPLACEMENT WILL BE AT THE DISCRETION OF THE INSPECTOR-IN-CHARGE.
21. STRUCTURAL STEEL BICYCLE SAFE GRATES MUST BE PROVIDED FOR ALL INLETS WITHIN THE ROADWAY PAVEMENT OF THOSE THAT MAY RECEIVE BICYCLE TRAFFIC (PENNDOT PUBLICATION 72M, RC-45M).
22. THE PERMITTEE IS RESPONSIBLE FOR THE COORDINATION OF RELOCATING ANY CONFLICTING UTILITIES WHICH ARE A RESULT OF THESE IMPROVEMENTS.
23. ALL UTILITY RELOCATION PERMITS TAKE PRECEDENCE OVER THE UTILITY RELOCATION POSITIONS SHOWN ON THE HOP PLANS.

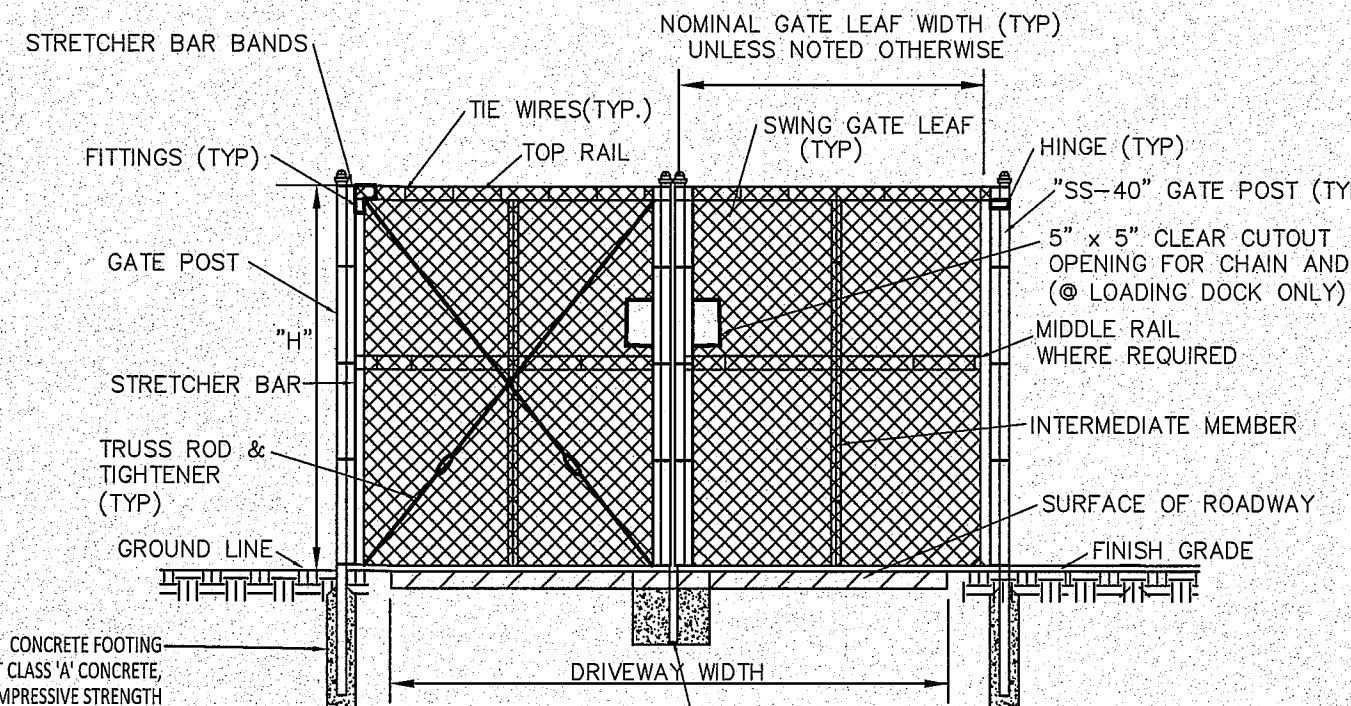


**R5-1**  
**DO NOT ENTER SIGN**  
N.T.S.

SIGN SIZE		LEGEND: WHITE (REFLECTORIZED) BACKGROUND: RED (REFLECTORIZED) BACKGROUND: WHITE (REFLECTORIZED) DIMENSIONS (INCHES)									
A	X	B	C	D	E	F	G	H	J	BLANK	
30x30	6.6	4D	1.9	5	14.6	12.4	9.9	7.9	B3-30		
36x36	7.6	5D	2.4	6	17.6	15	12.4	9.8	B3-36		
48x48	11	6D	3	8	23.6	20	14.9	11.8	B3-48		

NOTES:

1. SWING GATE MATERIAL AND CONSTRUCTION SHALL CONFORM TO ASTM F900, ASTM F1043 (ALUMINUM GATE FRAME), AND ASTM F1083 (ZINC COATED STEEL FRAME).
2. ALL GATE FRAME CORNERS SHALL BE WELDED.
3. GATE FABRIC SHALL BE THE SAME TYPE AS USED IN THE FENCE CONSTRUCTION, UNLESS NOTED OTHERWISE.
4. GATE FRAME SHALL BE DESIGNED AND BUILT SO THAT THE OUTER MEMBER SHALL NOT SAG IN EXCESS OF THE LESSOR OF 1% OF THE GATE LEAF WIDTH OR 2 INCHES.
5. DOUBLE GATE LATCH LOCKING DEVICES SHALL BE CONSTRUCTED SO THAT THE PLUNGER ROD CANNOT BE RAISED WHEN THE GATE IS LOCKED.
6. GATE STOPS SHALL BE PROVIDED FOR ALL DOUBLE GATES. KEEPER SHALL BE PROVIDED FOR EACH GATE LEAF OVER 5 FT.
7. DISTANCE BETWEEN GATE POSTS SHALL PROVIDE MIN. 18 INCH CLEARANCE BETWEEN GATE EAND EDGE OF PAVING/FACE OF CURB.



GATE LOCATION	DRIVEWAY WIDTH (FT)	HEIGHT "H" (FT)	NOMINAL GATE LEAF WIDTH (FT)	NOMINAL POST SIZE Ø (INCHES)	POST FTC DIAMETER (INCHES)	POST FTC DEPTH (INCHES)	POST MATERIAL	REMARKS
WEST D/W	20	6	10	6	18"	48"	GALV. STEEL	
EAST D/W	24	6	12	6	18"	48"	GALV. STEEL	

DOUBLE SWING GATE

INFORMATION SHOWN ON THIS PLAN IS THE RESULT OF PROFESSIONAL SERVICES AS RENDERED BY CATANIA ENGINEERING ASSOCIATES, INC. REPRODUCTION OF THIS PLAN FOR THE PURPOSE OF CREATING COPIES OR REVISING PLAN WITHOUT APPROVAL OF CATANIA ENGINEERING ASSOCIATES, INC. IS PROHIBITED. CERTIFICATION FOR THE WORK CONTAINED HEREIN IS LIMITED TO THE ENTITY FOR WHOM THE WORK WAS PERFORMED, AS OF THE DATE SHOWN ON THE PLAN.		NO.	DATE	REVISION	DWN. BY	CHK. BY
2	03-28-2023	ISSUE FOR BID			AHR	AHR
1	03-20-2023	PADOT HOP			AHR	AHR

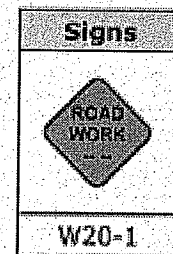


CATANIA ENGINEERING ASSOCIATES, INC.  
520 WEST MACDADE BLVD.  
MILMONT PARK, PA. 19033  
TEL. (610) 532-2884  
FAX. (610) 532-2923  
EMAIL: aofice10@cataniaengineering.com

**SITE PLAN – ADD ALTERNATE**  
**RECYCLING CENTER**  
**NETHER PROVIDENCE TOWNSHIP**

CAUTION: TO INSURE VALIDITY OF PLAN REGISTRATION SEAL MUST BE IN RED INK.		TOWNSHIP OF NETHER PROVIDENCE		DELAWARE COUNTY, PA	
DWN. BY	J.M.D.	DSG. BY		FIELD BOOK/PAGE	SCALE 1" = 10'
CHK. BY	G.J.G.			DATE 11/15/22	DRAWING NO. 83260-1096
				SHEET 2	OF 9 SHEETS

1. The shadow vehicle and TTC devices are not required if the work space is outside the highway right-of-way, behind barrier, more than 2' behind curb, or 15' or more from the edge of the roadway.
2. For operations of 60 minutes or less, all TTC devices may be eliminated if a shadow vehicle is present and the operation does not proceed against normal traffic flow.
3. When a shadow vehicle is not used, distance A is measured from the ROAD WORK sign.

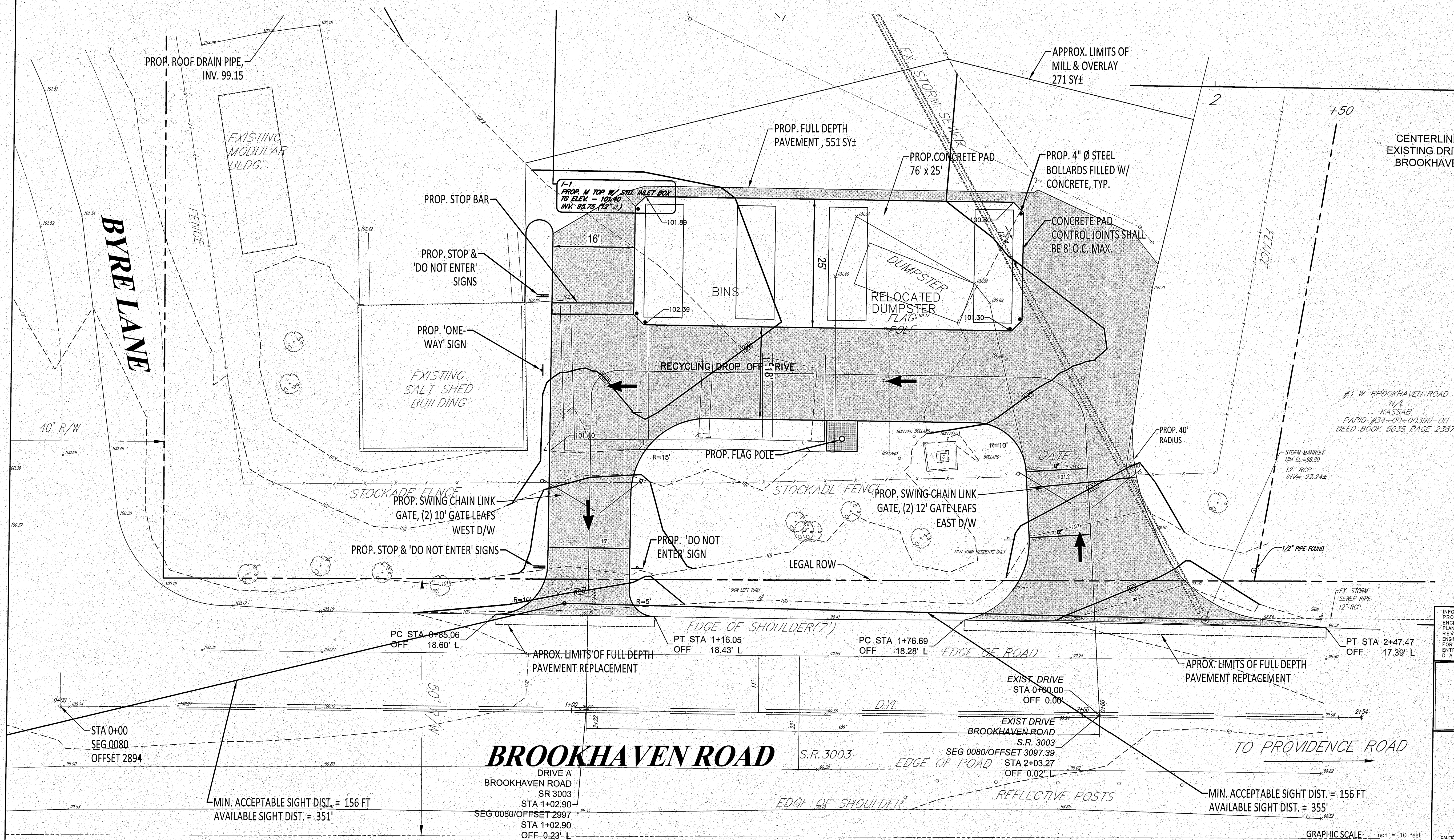
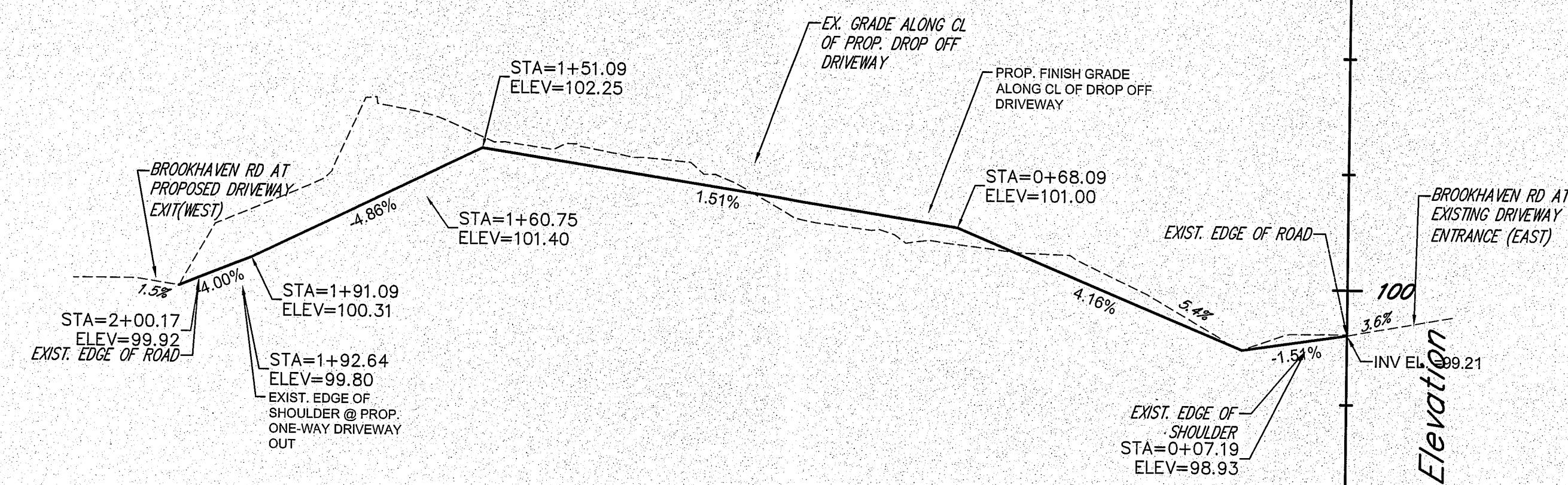


Sign Spacing, Channelizing Device Spacing, and Roll Ahead Space				
Speed S (MPH)	Channelizing Devices Spacing 2S (Feet)	Sign Spacing A (Feet)		Roll Ahead Space H (Feet)
		Urban	Rural	
25	50	100 - 200	500 - 800	150
30	60	100 - 200	500 - 800	150
35	70	100 - 200	500 - 800	150
40	80	350 - 500	500 - 800	150
45	90	350 - 500	500 - 800	150
50	100	350 - 500	500 - 800	250
55	110	350 - 500	500 - 800	250

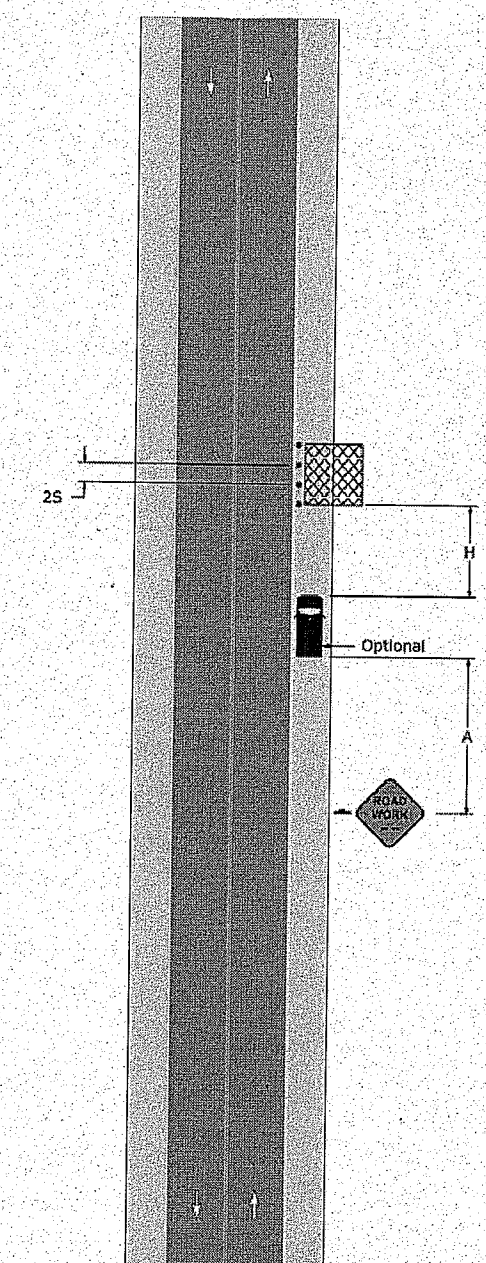
### SEQUENCE OF CONSTRUCTION:

DURING THE CONSTRUCTION OF THE NEW DRIVEWAY AND ANY OTHER UNDERGROUND UTILITY WORK ADJACENT TO THE ROADWAY CONSTRUCTION AREAS, PROVIDE ADEQUATE VEHICULAR AND PEDESTRIAN TRAFFIC PROTECTION AT ALL TIMES BY UTILIZING THE FOLLOWING:

1. SHORT-TERM TRAFFIC CONTROL OPERATIONS AND SIGNING AND DEVICES OUTLINED IN 'PATA 101-A' FOR WORK ALONG BROOKHAVEN ROAD, AS NEEDED TO COMPLETE THE WORK WITHIN THE WORK ZONE INCLUDING, BUT NOT LIMITED TO, SAWCUTTING, EXCAVATION, STORM SEWER/INLET INSTALLATION, TEMPORARY STEEL PLATING OVER THE PIPE TRENCH, INSTALL FULL DEPTH PAVEMENT RESTORATION, AND PAVEMENT MILLING/OVERLAY AREAS. AT THE END OF EACH DAY, PROTECT ALL DROP OFFS WITH A SAFETY SLOPE.
2. CONTRACTOR SHALL INSTALL STORM SEWER INLET AT EXISTING DRIVEWAY BY CLOSING 1/2 OF DRIVEWAY AT A TIME AND SHALL INSTALL TEMPORARY STEEL PLATING OVER THE INLET TRENCH IF NECESSARY. INSTALL FINAL PAVEMENT MARKINGS AND SIGNAGE IF NECESSARY.
3. REMOVE ALL TEMPORARY E&S MEASURES AND TEMPORARY TRAFFIC CONTROL DEVICES



PATA 101-A



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NO.	DATE	REVISION	DWN. BY
2	03-29-2023	ISSUE FOR BID	AHR
1	03-20-2023	PADOT HOP	AHR



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TEL. (610) 532-2884  
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EMAIL: official@cataniaengineering.com

HIGHWAY OCCUPANCY PERMIT PLAN - ADD  
ALTERNATE  
RECYCLING CENTER  
NETHER PROVIDENCE TOWNSHIP

CAUTION: TO INSURE VALIDITY OF PLAN, REGISTRATION SEAL MUST BE IN RED INK			
DWN. BY	AHR	DSG. BY	FIELD BOOK/PAGE
CHK. BY	C.J.C.		SCALE 1" = 10'
			DATE 11/15/22
			DRAWING NO. 83250-109G
			SHEET 3 OF 8 SHEETS

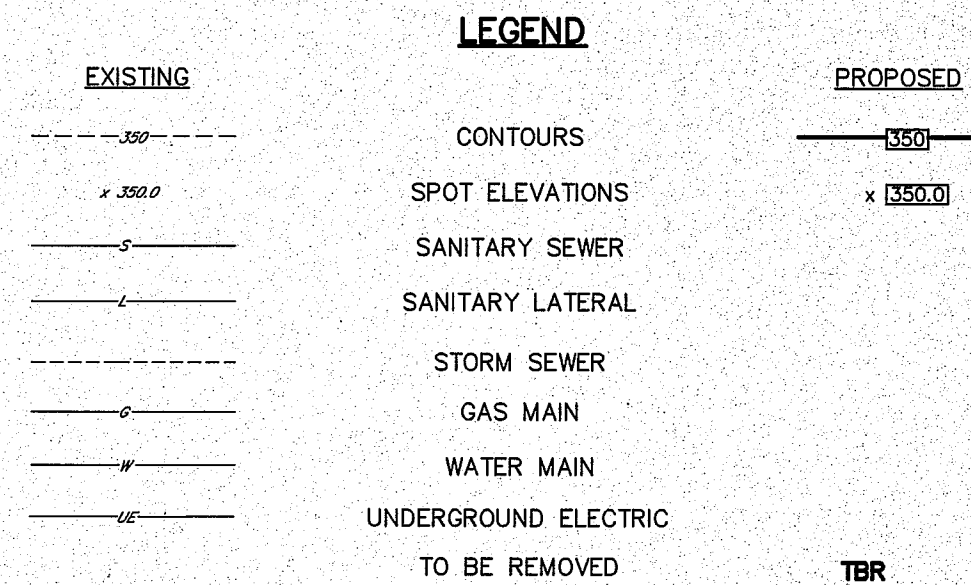
TOWNSHIP OF NETHER PROVIDENCE DELAWARE COUNTY, PA

**CALL BEFORE YOU DIG!**  
PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR  
CONSTRUCTION PHASE AND 10 WORKING  
DAYS IN DESIGN STAGE - STOP CALL 8-1-1

THE LOCATIONS OF ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT PA ONE-CALL AT 811 AT LEAST 3-DAYS BEFORE PROCEEDING WITH ANY EXCAVATION. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ACCURATE FIELD LOCATIONS OF ALL EXISTING UNDERGROUND AND AERIAL UTILITIES FROM BOTH THE UTILITY COMPANIES AND/OR BY TEST PITS PRIOR TO BEGINNING WORK. ALL UTILITY SERVICES WITHIN THE LIMITS OF WORK MUST ALSO BE FIELD LOCATED PRIOR TO EXCAVATION WORK. CONTRACTORS ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE PLAN INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO TAKE ALL PREVENTIVE MEASURES TO PROTECT THE LINES IN ACCORDANCE WITH THE PA ONE-CALL ACT.

Me - MADE LAND SCHIST & GNEISS MATERIALS

1. BOUNDARY, TOPOGRAPHIC AND PHYSICAL IMPROVEMENTS SHOWN (AS/RE FROM FIELD SURVEY BY CATANIA ENGINEERING ASSOCIATES INC. PERFORMED ON 5/02/2022).
2. CONTOURS PLOTTED FROM FIELD RUND TOPOGRAPHIC SURVEY BY CATANIA ENGINEERING ASSOCIATES INC., DATUM: ASSUMED. SITE BENCH IS A MANHOLE IN W. BROOKHAVEN ROAD WITH A RIM ELEVATION= 98.80.
3. UNDERGROUND UTILITIES SHOWN WERE PLOTTED FROM OBSERVABLE EVIDENCE AT THE TIME OF SURVEY AND INFORMATION FROM PLANS SUPPLIED BY UTILITY COMPANIES. NO GUARANTEE IS MADE THAT UNDERGROUND UTILITIES ARE ACCURATELY OR COMPLETELY SHOWN HEREON.
4. EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND CANNOT BE GUARANTEED AS TO THE ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO EXCAVATION. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTION, IT WILL BE THE DUTY OF THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING UTILITIES, MATERIALS AND DEEPS. TEST PIT INFORMATION SHALL BE GIVEN TO THE ENGINEER PRIOR TO CONSTRUCTION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS. ANY EXISTING UTILITY SERVICE CONNECTIONS LOCATED BY THE CONTRACTOR, CAPABLE OF SERVING THE PROPOSED USE SHALL BE REUSED AS LONG AS THEY ARE IN GOOD CONDITION AND MEET THE AUTHORITY'S STANDARDS AND SPECIFICATIONS. IF THE EXISTING UTILITY SERVICES DO NOT MEET THE ABOVE CRITERIA, THEN NEW SERVICE LINES SHALL BE INSTALLED.
5. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE, WHICH WOULD DISCLOSE ANY RIGHTS, RESERVATIONS, EASEMENTS, ETC., OF RECORD.
6. ZONING INFORMATION OBTAINED FROM TOWNSHIP ZONING ORDINANCE (AS POSTED ON THE TOWNSHIP WEBSITE) AT TIME OF SURVEY. PROJECT ENGINEER IS RESPONSIBLE FOR CHECKING LATEST TOWNSHIP ORDINANCES FOR ANY & ALL UPDATES OR TOWNSHIP REVISIONS.
7. THIS PROPERTY IS LOCATED WITHIN FLOOD HAZARD ZONE 'X' AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP FOR DELAWARE COUNTY, PA. MAP NO. 42905C0049; DATED NOVEMBER 18, 2009.
8. SOILS INFORMATION PROVIDED WITH SUPPORT FROM THE NATURAL RESOURCES CONSERVATION SERVICE. SOILS ATTRIBUTE DATA IS SERVED FROM THE NRCS SOIL DATA MART.
9. THE ACCURACY AND COMPLETENESS OF THIS INFORMATION HAS BEEN PROVIDED TO THE BEST ABILITY OF THE ENGINEER. HOWEVER, THE CONTRACTOR IS ADVISED TO VERIFY IN THE FIELD ALL THE FACTORS CONCERNING THE LOCATION OF ALL UTILITIES PRIOR TO BIDDING AND CONSTRUCTION. LOCATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE AND SHOULD BE VERIFIED BY THE CONTRACTOR.
10. DO NOT SCALE DRAWINGS AS THEY PERTAIN TO ADJACENT AND SURROUNDING PHYSICAL CONDITION BUILDINGS, STRUCTURES, ETC. THEY ARE SCHEMATIC ONLY, EXCEPT WHERE DIMENSIONS ARE SHOWN THERETO.
11. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY FIELD OR SOIL CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON, SUCH CONDITIONS COULD RENDER THE DESIGNS HEREON INAPPROPRIATE OR INEFFECTIVE



NETHER PROVIDENCE TOWNSHIP  
214 SYKES LANE  
WALLINGFORD, PA .19086  
PARID #34-00-00390-01  
DEED 12-24-1984  
AREA = 57,017 S.F. (GROSS)  
53,520 S.F. (NET)




CATANIA ENGINEERING ASSOCIATES, INC.  
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EMAIL: [office10@cataniaengineering.com](mailto:office10@cataniaengineering.com)

## TOWNSHIP OF NETHER PROVIDENCE DELAWARE COUNTY, PA

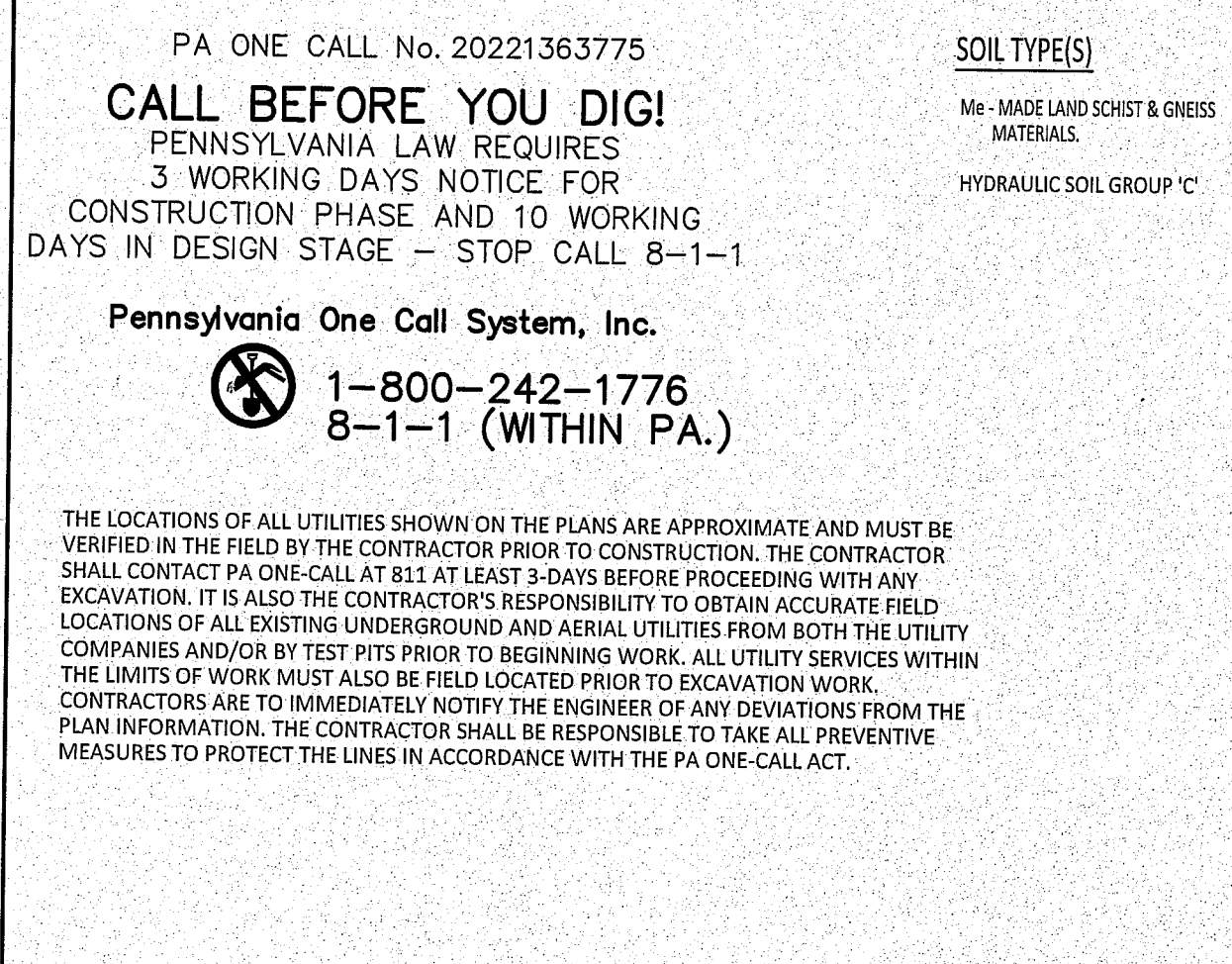
DWN. BY	<u>J.M.D.</u>	DSG. BY		FIELD BOOK/PAGE		SCALE	<u>1" = 20'</u>	DRAWING NO.	<u>83250-109G</u>
CKD. BY	<u>C.J.C.</u>					DATE	<u>05/16/22</u>	SHEET	<u>4</u> OF <u>9</u> SHEETS

PA ONE CALL No. 20221363775  
**CALL BEFORE YOU DIG!**  
PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR  
CONSTRUCTION PHASE AND 10 WORKING  
DAYS IN DESIGN STAGE - STOP CALL 8-1-1

**Pennsylvania One Call System, Inc.**  
 **1-800-242-1776**  
**8-1-1 (WITHIN PA.)**

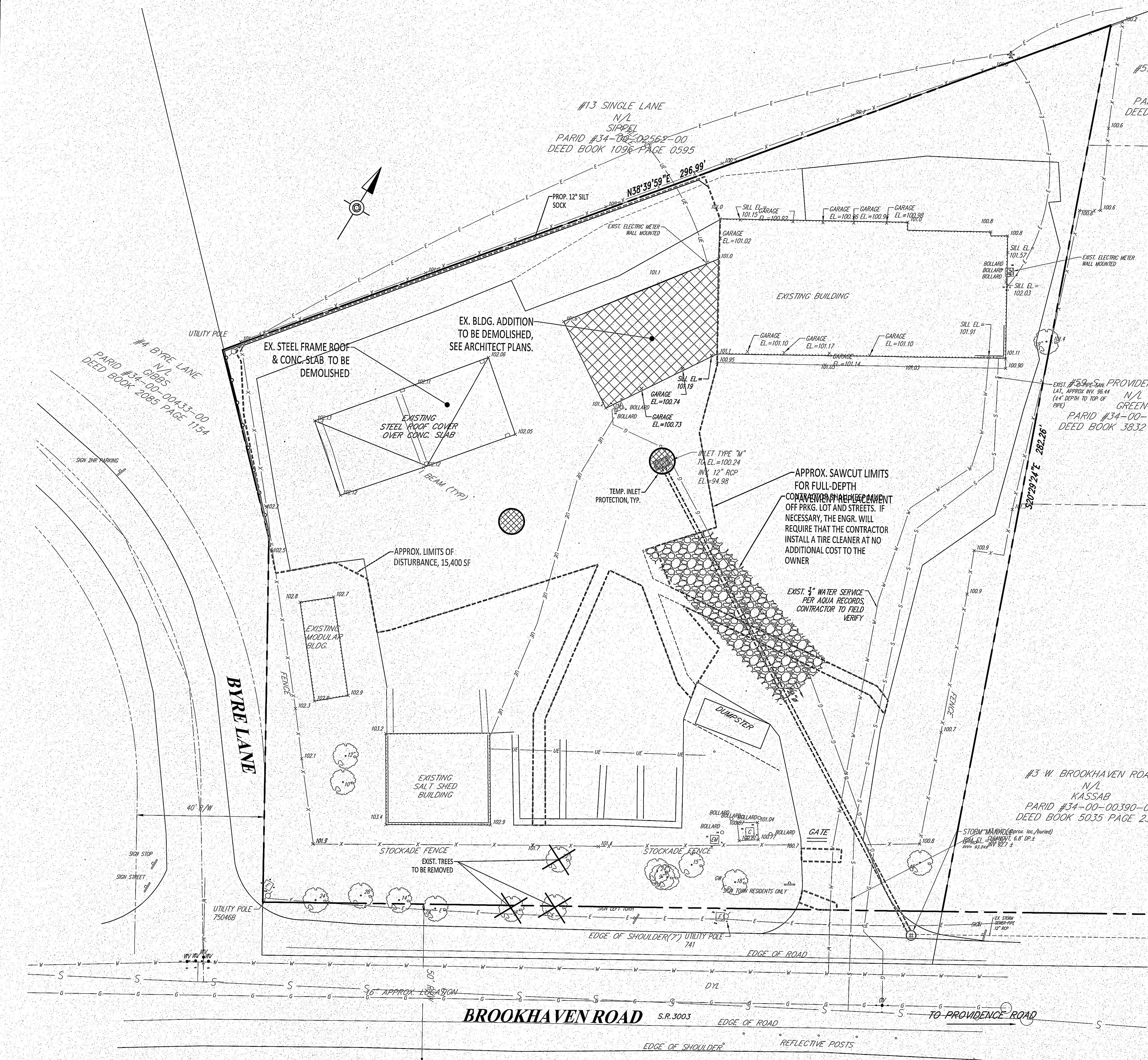
THE LOCATIONS OF ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE  
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THE LIMITS OF WORK MUST ALSO BE FIELD LOCATED PRIOR TO EXCAVATION WORK.  
CONTRACTORS ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE  
PLAN INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO TAKE ALL PREVENTIVE  
MEASURES TO PROTECT THE LINES IN ACCORDANCE WITH THE PA ONE-CALL ACT.

**NOTES:**  
MAXIMUM DRAINAGE AREA = 1/2 ACRE.  
INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP.  
BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.  
ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD  
SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN  
CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN  
PERMANENTLY.  
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A  
MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS.  
FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.  
INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT.  
BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY  
HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR  
CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT  
OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION.  
DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.  
DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.



**INSTALLATION DETAIL**  
**ISOMETRIC VIEW**  
**SECTION VIEW**  
**PLAN VIEW**

**FILTER BAG INLET PROTECTION, TYPE II**  
N.T.S.



**DEMOLITION & SITE PREPARATION NOTES**

- THE CONTRACTOR SHALL INCLUDE IN THEIR BID THE COST OF REMOVING ANY EXISTING SITE FEATURES NECESSARY TO ACCOMPLISH THE CONSTRUCTION OF THE PROPOSED SITE IMPROVEMENTS. THE CONTRACTOR SHALL ALSO INCLUDE IN THEIR BID THE COST NECESSARY TO RESTORE ALL ITEMS THAT ARE SCHEDULED TO REMAIN AS PART OF THE FINAL SITE IMPROVEMENTS. REFER TO SITE PLANS AND PADOT HOP PLAN SETS TO DETERMINE EXCAVATION, DEMOLITION AND TO DETERMINE THE LOCATION OF THE PROPOSED SITE IMPROVEMENTS. MATERIALS. THE OWNER'S ENVIRONMENTAL CONSULTANT SHALL BE RESPONSIBLE ALL ENVIRONMENTAL WORK AND REMEDIATION/REMOVAL.
- UNLESS SPECIFIED OTHERWISE, ALL SITE FEATURES WITHIN THE LIMITS OF DISTURBANCE ARE TO BE REMOVED/DEMOLISHED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF SIGNIFICANT DISCREPANCIES ARE DISCERNED BETWEEN THIS PLAN AND FIELD CONDITIONS.
- CATANIA ENGINEERING AND ITS EMPLOYEES ARE NOT RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR AND THEIR SUBCONTRACTORS ARE RESPONSIBLE FOR ALL DEMOLITION WORK AND TO ENSURE THAT THIS WORK IS DONE IN A SAFE MANNER IN ACCORDANCE WITH THE LATEST OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) REQUIREMENTS TO ENSURE SAFETY TO THE WORKERS AND THE PUBLIC.
- PRIOR TO STARTING ANY DEMOLITION WORK, THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING:
  - OBTAINING ALL PERMITS AND KEEPING A COPY OF ALL PERMITS ON SITE FOR REVIEW.
  - INSTALLING THE REQUIRED E&S CONTROL MEASURES PRIOR TO SITE DISTURBANCE.
  - LOCATE ALL EXISTING UTILITIES AND CONTACT PA ONE-CALL.
  - PROTECT AND MAINTAIN IN OPERATION ALL UTILITIES THAT ARE NOT INTENDED TO BE REMOVED.
  - CONTACT ALL UTILITIES INVOLVED WITH UTILITY SHUT-OFFS/ABANDONMENT VIA PA ONE-CALL OR DIRECTLY AND COORDINATE WITH THEM IN ENSURING THAT ALL APPROPRIATE SERVICES ARE PROPERLY SHUT-OFF/ABANDONED.
  - PERFORM A COMPLETE BUILDING INSPECTION BY A LICENSED ENVIRONMENTAL TESTING AGENCY OF ALL BUILDINGS/STRUCTURES TO BE DEMOLISHED TO ENSURE THAT SUCH DEMOLITION SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL ENVIRONMENTAL REGULATIONS. A THOROUGH/COMPLETE INSPECTION FOR CONTAMINANTS SHALL BE COMPLETED BY A LICENSED ENVIRONMENTAL TESTING AGENCY. ALL IDENTIFIED CONTAMINANTS BY THE LICENSED ENVIRONMENTAL TESTING AGENCY SHALL BE REMOVED AND DISPOSED OF BY A FEDERALLY LICENSED CONTRACTOR IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.
- IF THE OWNER ELECTS TO RETAINS ANY MATERIAL, THEN THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE OWNER TO HAVE THOSE MATERIALS REMOVED OFF SITE AT NO ADDITIONAL COST.
- UNLESS SPECIFICALLY NOTED TO BE SAVED / STOCKPILED, ALL SITE FEATURES CALLED FOR REMOVAL(REM) SHALL BE REMOVED WITH THEIR FOOTINGS, ATTACHMENTS, BASE MATERIAL, ETC, TRANSPORTED FROM THE SITE TO BE DISPOSED OF IN A LAWFUL MANNER AT AN ACCEPTABLE DISPOSAL SITE AND AT NO ADDITIONAL COST TO THE OWNER.
- ALL EXISTING SITE FEATURES TO REMAIN SHALL BE PROTECTED THROUGHOUT THE CONSTRUCTION PERIOD. ANY FEATURES DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL PERFORM ALL EARTH DISTURBANCE AND DEMOLITION ACTIVITIES IN ACCORDANCE WITH DIRECTION BY THE OWNER'S GEOTECHNICAL ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY TRAFFIC CONTROL, SECURITY FENCING, AND ENSURE THAT ANY EXISTING WALKWAYS/SIDEWALKS ARE KEPT OPEN AT ALL TIMES UNLESS AN APPROVED DETOUR PLAN PREPARED BY THE CONTRACTOR IS APPROVED BY THE MUNICIPALITY AND PADOT.
- THE CONTRACTOR IS RESPONSIBLE TO CONDUCT THE DEMOLITION AND SITE IMPROVEMENTS WITH MINIMAL DISTURBANCE TO ADJACENT ROADS. ALL TEMPORARY ROAD CLOSURES WILL BE THE CONTRACTORS RESPONSIBILITY TO OBTAIN THE NECESSARY MUNICIPALITY'S PERMISSION.
- DURING EARTHWORK OPERATIONS, THE CONTRACTOR SHALL TAKE CARE TO NOT DISTURB EXISTING MATERIALS TO REMAIN OR AREAS THAT ARE OUTSIDE/BEYOND THE LIMITS OF DISTURBANCE. THE CONTRACTOR SHALL TAKE WHATEVER MEASURES NECESSARY, AT THE CONTRACTOR'S EXPENSE, TO PREVENT ANY EXCAVATED MATERIAL FROM COLLAPSING AND FROM DAMAGING EXISTING TREES TO REMAIN ALONG THE STREAM BANK. ALL BACKFILL MATERIALS SHALL BE PLACED AND COMPACTED AS SPECIFIED TO THE SUB-GRADE REQUIRED FOR THE INSTALLATION OF THE REMAINDER OF THE CONTRACT WORK.
- IT SHALL BE THE CONTRACTOR'S OPTION, WITH CONCURRENCE OF THE OWNER, TO REUSE EXISTING GRAVEL IF IT MEETS THE REQUIREMENTS OF THE SPECIFICATIONS FOR GRAVEL BORROW.
- 'CLEAR AND GRUB VEGETATION' SHALL INCLUDE REMOVAL OF GRASS, SHRUBS, AND UNDERBRUSH, REMOVAL OF ROOTS, ROUGH GRADING, INSTALLATION OF LOAM (IF APPLICABLE), FINE GRADING, SEEDING AND TURF ESTABLISHMENT BY THE CONTRACTOR.
- THE STORAGE OF MATERIALS AND EQUIPMENT WILL BE PERMITTED AT LOCATIONS DESIGNATED BY OWNER OR OWNER'S REPRESENTATIVE. PROTECTION OF STORED MATERIALS AND EQUIPMENT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- STRIP & STORE EXISTING TOPSOIL FOR LATER REUSE WHERE APPROPRIATE, AND AS NOTED ON PLAN, WITH APPROPRIATE EROSION AND SEDIMENT CONTROLS.
- LOAM/TOP SOIL DESIGNATED FOR REUSE AS TOPSOIL FOR SEEDING/LANDSCAPED AREAS SHALL BE BLENDED WITH MASONRY SAND & COMPOST MATERIAL AS SPECIFIED TO IMPROVE/PROMOTE PLANT GROWTH.
- THE CONTRACTOR SHALL PROTECT EXISTING TREES TO REMAIN, CONTRACTOR SHALL INSTALL TREE PROTECTION BARRIER AFTER CLEARING UNDERBRUSH AND TAKE DUE CARE TO PREVENT INJURY TO TREES DURING CLEARING OPERATIONS.
- EXPLOSIVES ARE NOT PERMITTED TO BE USED ON THIS SITE WITHOUT PRIOR WRITTEN CONSENT OF BOTH THE OWNER AND APPLICABLE GOVERNMENTAL AUTHORITIES.
- SAFE PUBLIC ACCESS SHALL BE MAINTAINED AS REQUIRED DURING THE REMOVAL AND REPLACEMENT OF SIDEWALK.
- APPROPRIATE DUST CONTROL MEASURES MUST BE IN PLACE TO KEEP DUST AND AIRBORNE DEBRIS FROM EXCEEDING FEDERAL, STATE AND LOCAL STANDARDS.
- DEBRIS SHALL NOT BE BURIED ON THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROPERLY REMOVE AND DISPOSE OF HAZARDOUS MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS.
- THE FOUNDATION OF ALL EXISTING STRUCTURES TO BE DEMOLISHED MUST BE REMOVED TO AT LEAST TWO FEET BELOW EXISTING GRADE. IF THE EXISTING FOUNDATION WILL INTERFERE WITH PROPOSED UTILITIES OR FOUNDATIONS, THEN IT MUST EITHER BE REMOVED COMPLETELY FOR PROPOSED FOUNDATIONS OR REMOVED TO PROVIDE A MIN. 18" CLEARANCE FROM PROPOSED UTILITIES. EXCEPTION, THE EXISTING BUILDING AND ITS FOUNDATION SHALL BE REMOVED IN ITS ENTIRETY.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE DUST CONTROL MEASURES AS REQUIRED TO LIMIT THE AMOUNT OF AIRBORNE DUST AND DIRT FROM LEAVING THE SITE IN THE AIR IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL STANDARDS.

**TABLE A - SEEDING REQUIREMENTS**

FORMULA & SPECIES	PERCENT BY WEIGHT	MINIMUM PERCENT		MAX. PERCENT WEED SEED	SEEDING RATE LB/1000 SY
		PURITY	GERMINATION		
<b>FORMULA B:</b> PERENNIAL RYEGRASS MIXTURE (LOLIUM PERENNE) CREEPING RED FESCUE OR CHEWINGS FESCUE KENTUCKY BLUEGRASS MIXTURE (POA PRATENSIS)	20	98	90	0.15	21.0 TOTAL
	30	98	85	0.15	4.0
	50	98	80	0.20	6.0
<b>FORMULA E:</b> ANNUAL RYEGRASS (LOLIUM MULTIFLORUM)	100	98	90	0.15	11.0
					10.0 TOTAL

- GENERAL NOTES**
- BOUNDARY, TOPOGRAPHIC AND PHYSICAL IMPROVEMENTS SHOWN IS/ARE FROM FIELD SURVEY BY CATANIA ENGINEERING ASSOCIATES, INC. PERFORMED ON 5/02/2022.
  - CONTOURS PLOTTED FROM FIELD RUN TOPOGRAPHIC SURVEY BY CATANIA ENGINEERING ASSOCIATES, INC. DATUM: ASSUMED. SITE BENCH IS A MANHOLE IN W. BROOKHAVEN ROAD WITH A RIM ELEVATION= 98.80.
  - UNDERGROUND UTILITIES SHOWN WERE PLOTTED FROM OBSERVABLE EVIDENCE AT THE TIME OF SURVEY AND INFORMATION FROM PLANS SUPPLIED BY UTILITY COMPANIES. NO GUARANTEE IS MADE THAT UNDERGROUND UTILITIES ARE ACCURATELY OR COMPLETELY SHOWN HEREON.
  - THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT, WHICH WOULD DISCLOSE ANY RIGHTS, RESERVATIONS, EASEMENTS, ETC., OF RECORD.
  - ZONING INFORMATION OBTAINED FROM TOWNSHIP ZONING ORDINANCE (AS POSTED ON THE TOWNSHIP WEBSITE) AT TIME OF SURVEY. PROJECT ENGINEER IS RESPONSIBLE FOR CHECKING LATEST TOWNSHIP ORDINANCES FOR ANY & ALL UPDATES OR TOWNSHIP REVISIONS.
  - THIS PROPERTY IS LOCATED WITHIN FLOOD HAZARD ZONE AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP FOR DELAWARE COUNTY, PA. MAP NO. 42045C0004F, DATED NOVEMBER 18, 2009.
  - SOILS INFORMATION PROVIDED WITH SUPPORT FROM THE NATURAL RESOURCES CONSERVATION SERVICE. SOILS ATTRIBUTE DATA IS SERVED FROM THE NICS SOIL DATA MART.

BASE BID:  
APPROXIMATE PAVEMENT/CONCRETE/BLDG. AREA TABULATION:

EXIST:	
FULL-DEPTH ASPHALT REMOVAL	11,515 SF
GRAVEL	965 SF
BLDG. TRR	3,000 SF
TOTAL	15,480 SF

PROPOSED:

FULL-DEPTH ASPHALT	8,862 SF
CRUSHED STONE PAD	1,541 SF
CONCRETE APRON	400 SF
CONCRETE LANDINGS	32 SF
BLDG. FOOTPRINT	3,288 SF
TOTAL	14,133 SF

APPROXIMATE LIMITS OF DISTURBANCE = 15,400 SF

ADD ALTERNATIVE  
DROP-OFF DRIVEWAY & RECYCLING PAD:

PROPOSED:	
FULL-DEPTH ASPHALT	4,205 SF
CONCRETE RECYCLE PAD	1,892 SF
TOTAL	6,097 SF

TOTAL IMPERVIOUS BASED BID & ADD = 20,230 SF

**OWNER**  
NETHER PROVIDENCE TOWNSHIP  
214 SYKES LANE  
WALLINGFORD, PA 19086  
PARID #34-00-00390-01  
DEED 12-24-1984  
AREA = 57,017 S.F. (GROSS)  
53,520 S.F. (NET)

**LEGEND**

- EXISTING**
- CONTOURS
  - SPOT ELEVATIONS
  - SANITARY SEWER
  - SANITARY LATERAL
  - STORM SEWER
  - GAS MAIN
  - WATER MAIN
  - UNDERGROUND ELECTRIC
  - TO BE REMOVED
- PROPOSED**
- CONTOURS
  - SPOT ELEVATIONS
  - SANITARY SEWER
  - SANITARY LATERAL
  - STORM SEWER
  - GAS MAIN
  - WATER MAIN
  - UNDERGROUND ELECTRIC
  - TO BE REMOVED



INFORMATION SHOWN ON THIS PLAN IS THE RESULT OF PROFESSIONAL SERVICES AS RENDERED BY CATANIA ENGINEERING ASSOCIATES, INC. REPRODUCTION OF THIS PLAN FOR THE PURPOSE OF CREATING ADDITIONAL COPIES OR REVISING PLAN WITHOUT APPROVAL OF CATANIA ENGINEERING ASSOCIATES, INC. IS PROHIBITED. CERTIFICATION FOR THE WORK CONTAINED HEREIN IS LIMITED TO THE ENTITY FOR WHOM THE WORK WAS PERFORMED, AS OF THE DATE SHOWN ON THE PLAN.

2	10-29-2023	ISSUE FOR BID	AHR	AHR
1	02-27-2023	PADOT HOP	AHR	AHR
NO.	DATE	REVISION	DWN.	OKD. BY

**CEA**

CATANIA ENGINEERING ASSOCIATES, INC.  
520 WEST MacDADE BLVD.  
MILMONT PARK, PA. 19033  
TEL: (610) 532-2884  
FAX: (610) 532-2823  
EMAIL: office10@cataniaengineering.com


**SITE DEMOLITION PLAN: BASE BID**  
**RECYCLING CENTER**  
**NETHER PROVIDENCE TOWNSHIP**

TOWNSHIP OF NETHER PROVIDENCE  
DELAWARE COUNTY, PA

DWN. BY **J.M.D.** DSG. BY  
OKD. BY **C.J.C.**

FIELD BOOK/PAGE  
SCALE 1" = 20'  
DATE 05/16/22  
DRAWING NO. 83250-100G  
SHEET 5 OF 9 SHEETS

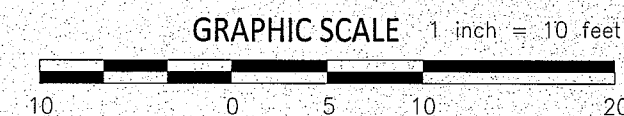
**CALL BEFORE YOU DIG!**  
PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR  
CONSTRUCTION PHASE AND 10 WORKING  
DAYS IN DESIGN STAGE - STOP CALL 8-1-1

 1-800-242-1776  
8-1-1 (WITHIN PA.)

Me - MADE LAND SCHIST &amp; GNEISS MATERIALS.

1. BOUNDARY, TOPOGRAPHIC AND PHYSICAL INFORMATION SHOWN IS/ARE FROM FIELD SURVEY BY CATANIA ENGINEERING ASSOCIATES, INC. PERMEATION ON 5/02/2002.
2. CONTOURS PLOTTED FROM FIELD TOPNOGRAPHIC SURVEY BY CATANIA ENGINEERING ASSOCIATES, INC. DATA ASSUMED. SITE BEING IS A MANHOLE IN W. BROOKVIEWEN ROAD WITH A RIM ELEVATION=99.80.
3. UNDERGROUND UTILITIES WERE PLOTTED FROM OBSERVABLE EVIDENCE AT THE TIME OF SURVEY AND INFORMATION FROM PLANS SUPPLIED BY UTILITY COMPANIES. NO GUARANTEE IS MADE THAT UNDERGROUND UTILITIES ARE ACCURATE OR COMPLETELY SHOWN HEREIN.
4. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT, WHICH WOULD DISCLOSE ANY RIGHTS, RESERVATIONS, EASEMENTS, ETC. OF RECORD.
5. ZONING INFORMATION OBTAINED FROM TOWNSHIP ZONING ORDINANCE (AS POSTED ON THE TOWNSHIP WEBSITE) AT TIME OF SURVEY. PROJECT ENGINEER IS RESPONSIBLE FOR CHECKING LATEST TOWNSHIP ORDINANCES FOR ALL UPDATES TO TOWNSHIP RESOLUTIONS.
6. THIS SURVEY IS LOCATED WITHIN FLOOD HAZARD ZONE AREA'S DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP FOR DELAWARE COUNTY, PA. MAP NO. 42045C02048, DATED NOVEMBER 18, 2009.
7. SOILS INFORMATION PROVIDED WITH SURVEY FROM THE NATURAL RESOURCES CONSERVATION SERVICE. SOILS ATTRIBUTE DATA IS SERVED FROM THE NRCS SOIL DATA MAP.

1. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES THAT MAY AFFECT THE PUBLIC SAFETY OR PROJECT COST. PROCEEDING WITH CONSTRUCTION WITHOUT NOTIFICATION IS DONE SO AT THE CONTRACTOR'S OWN RISK.
2. CONTRACTOR IS RESPONSIBLE TO ENSURE THE FOLLOWING MINIMUM GRADING STANDARDS TO ENSURE PROPER DRAINAGE AND PREVENTION OF PONDING. A MINIMUM 0.75% SLOPE AGAINST ALL ISLANDS, GUTTERS, AND CURBS RECEIVING DRAINAGE SHALL BE PROVIDED. A MINIMUM OF 1.0% SLOPE ON ALL CONCRETE AND 1.5% SLOPE ON ALL ASPHALT AND 2% MINIMUM ON ALL GRASS/PERVIOUS SURFACE.
3. THE TOPS OF EXISTING MANHOLE FRAME/COVERS, INLET GRATES, UTILITY VALVES, AND SANITARY CLEANOUTS MUST BE ADJUSTED, AS NECESSARY, TO MATCH PROPOSED GRADES IN ACCORDANCE WITH ALL APPLICABLE STANDARDS, REQUIREMENTS, LAWS AND CODES. ALL EXISTING/PROPOSED WALKING SURFACE HARDWARE, SUCH AS BUT NOT LIMITED TO, JUNCTION BOX COVERS, CLEAN-OUT COVERS, SEWER GRATES, UTILITY COVERS, AND SIMILAR ELEMENTS THAT PEDESTRIANS CAN REASONABLY BE EXPECTED TO WALK ON AND WITHIN FORESEEABLE PEDESTRIAN PATHS SHALL BE MAINTAINED LEVEL/FLUSH WITH THE SURROUNDING SURFACES.
4. DURING THE INSTALLATION OF SANITARY SEWER, STORM SEWER, AND ALL UTILITIES, THE CONTRACTOR MUST MAINTAIN A CONTEMPORANEOUS AND THOROUGH RECORD OF CONSTRUCTION TO IDENTIFY THE AS-INSTALLED LOCATIONS OF ALL UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR MUST CAREFULLY NOTE ANY INSTALLATIONS THAT DEVIATE FROM THE INFORMATION CONTAINED IN THE UTILITY PLAN. THIS RECORD MUST BE KEPT ON A CLEAN COPY OF THESE PLANS, WHICH CONTRACTOR MUST PROMPTLY PROVIDE TO THE OWNER AT THE COMPLETION OF WORK.
5. SEWERS CONVEYING SANITARY FLOW, CSO FLOW OR INDUSTRIAL FLOW MUST BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY. IF SUCH HORIZONTAL SEPARATION IS NOT POSSIBLE, THEN THE PIPES MUST BE IN SEPARATE TRENCHES WITH THE TOP OF THE SEWER PIPE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN. WHERE APPROPRIATE SEPARATION FROM A WATER MAIN IS NOT POSSIBLE, THE SEWER MUST BE ENCASED IN CONCRETE FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE. WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWER MUST BE PROVIDED.
6. CATANIA ENGINEERING AND THEIR CLIENT IS NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, SHALL HAVE NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION AND SHALL BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH DAMAGE OR EXISTING CONSTRUCTION NECESSARY FOR RESTORATION OF CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS, AND REGULATIONS AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR IS RESPONSIBLE TO DOCUMENT ALL EXISTING DAMAGE AND TO NOTIFY THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
8. THE GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. CATANIA ENGINEERING SHALL BE INDEMNIFIED BY THE GENERAL CONTRACTOR AND MUST BE NAMED AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE AS DESCRIBED ABOVE FOR JOB SITE SAFETY. NEITHER THE PROFESSIONAL ACTIVITIES NOR THE PRESENCE OF CATANIA ENGINEERING AND/OR ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, SHAREHOLDERS, MEMBERS, PRINCIPALS, AND EMPLOYEES AT A CONSTRUCTION/PROJECT SITE, SHALL RELIEVE THE GENERAL CONTRACTOR OF ITS OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS AND METHODS/TECHNIQUES OR OTHERWISE NECESSARY FOR PERFORMING, SUPERVISING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES WITH JURISDICTION OVER THE PROJECT AND/OR PROPERTY. THE ENGINEER AND ITS PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PROGRAMS OR PROCEDURES.
9. ALL CONCRETE FOR NOTED FOR SIDEWALK, WALKWAYS, PAVEMENT, OR UTILITY PIPE ENCASEMENT SHALL BE AIR-ENTRAINED CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS NOTED ON THE PLANS, DETAILS AND / OR GEOTECHNICAL REPORT IN ACCORDANCE WITH PADOT COMPRESSIVE CLASS SPECIFICATION.
10. UNLESS OTHERWISE INDICATED WITHIN THE APPROVED PLANS, ALL DISTURBED AREAS THAT WILL BE LANDSCAPED ARE TO RECEIVE A MINIMUM OF SIX INCHES OF SCREENED TOPSOIL, SEED, MULCH, AND WATER UNTIL A HEALTHY STAND OF GRASS IS ESTABLISHED.
11. ALL DIMENSIONS AND RADI ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
12. EXISTING PAVEMENT SHALL BE SAW CUT IN STRAIGHT LINES TO THE FULL DEPTH OF THE EXISTING PAVEMENT. AS APPLICABLE, THESE PLANS DEPICT THE MINIMUM AREAS OF MILL/OVERLAY REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE OWNER ON ADDITIONAL MILL/OVERLAY REQUIREMENTS.
13. EXISTING STRUCTURES WITHIN CONSTRUCTION LIMITS SHALL BE PROPERLY ABANDONED, REMOVED, OR RELOCATED, AS NECESSARY. ALL COSTS SHALL BE INCLUDED IN BASE BID.
14. FOR MATERIALS AND/OR SPECIFICATIONS NOT SPECIFICALLY REFERENCED ON THESE PLANS OR STATE AND LOCAL REQUIREMENTS THE PROJECT SHALL BE CONSTRUCTED IN CONFORMANCE WITH PENNDOT PUB 408 LATEST REVISION.



**CEA** 

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RECYCLING CENTER  
NETHER PROVIDENCE TOWNSHIP

DWN. BY	<u>J.M.D.</u>	DSG. BY		FIELD BOOK/PAGE	SCALE	<u>1" = 10'</u>	DRAWING NO.	<u>83250-109G</u>
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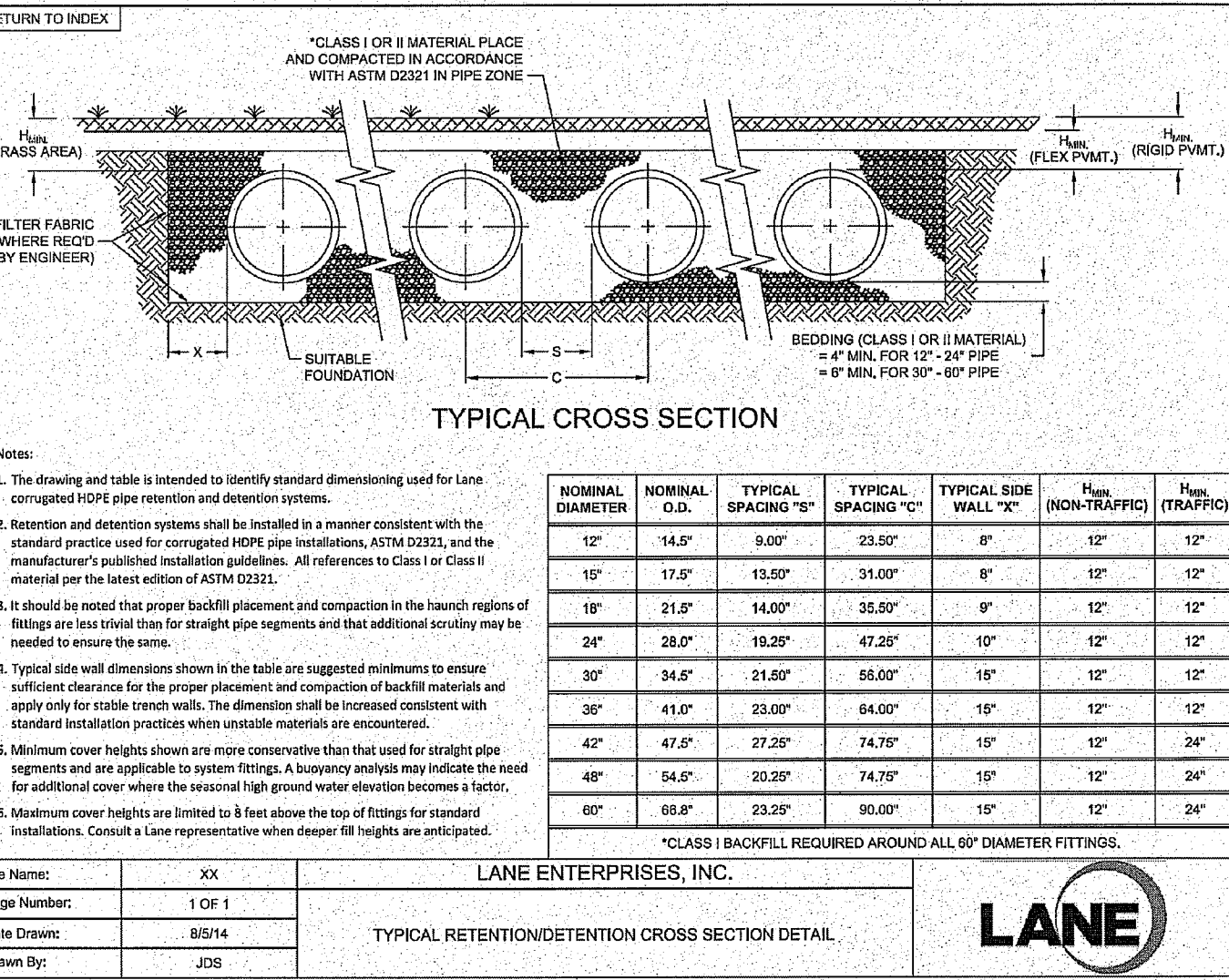
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PA ONE CALL No. 20221363775  
**CALL BEFORE YOU DIG!**  
PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR  
CONSTRUCTION PHASE AND 10 WORKING  
DAYS IN DESIGN STAGE – STOP CALL 8-1-1

Pennsylvania One Call System, Inc.

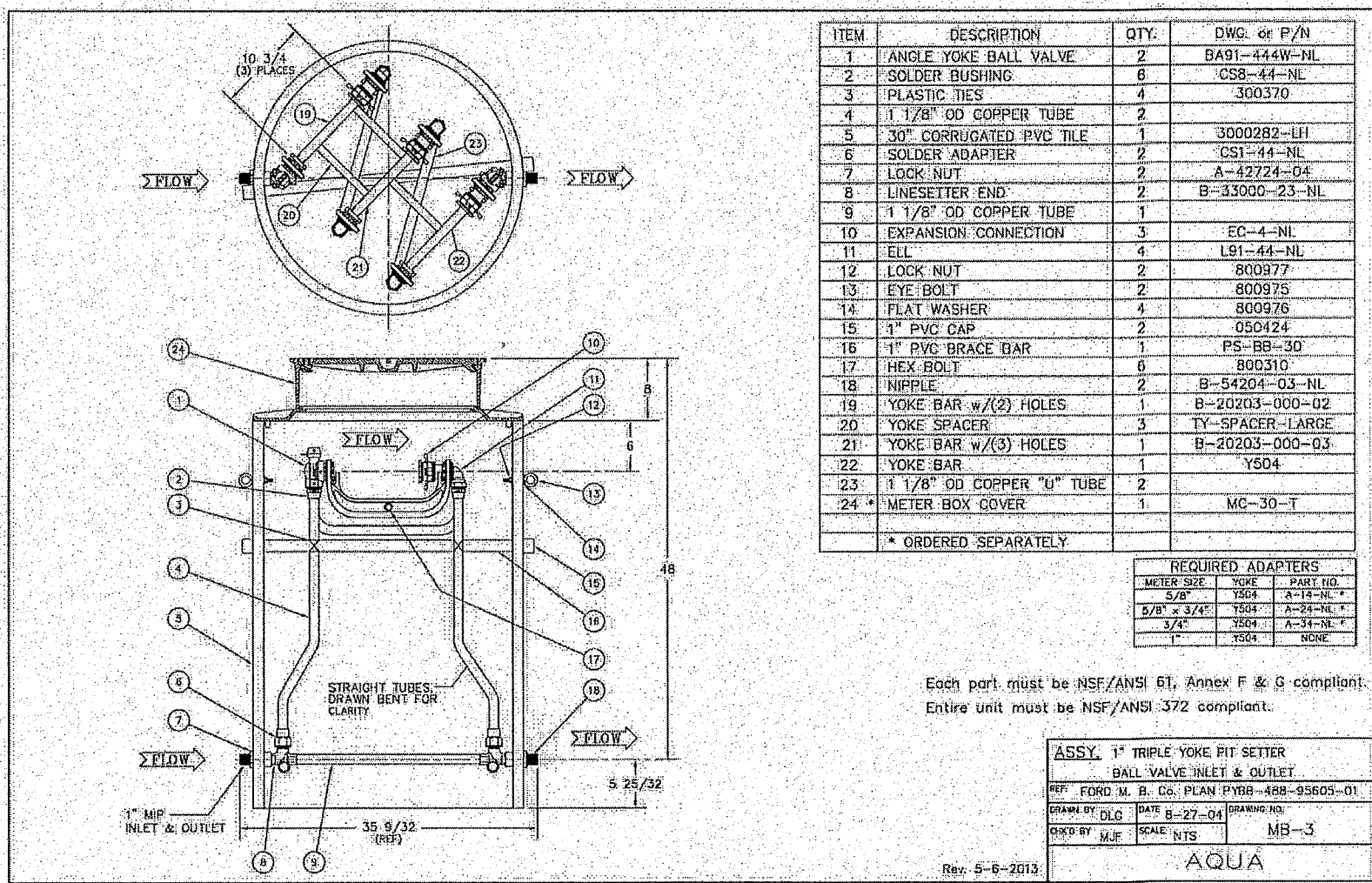
**1-800-242-1776  
8-1-1 (WITHIN PA.)**

THE LOCATIONS OF ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE  
VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR  
SHALL CONTACT PA ONE-CALL AT 811 AT LEAST 3-DAYS BEFORE PROCEEDING WITH ANY  
EXCAVATION. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ACCURATE FIELD  
LOCATIONS OF ALL EXISTING UNDERGROUND AND AERIAL UTILITIES FROM BOTH THE UTILITY  
COMPANIES AND/OR BY TEST PITS PRIOR TO BEGINNING WORK. ALL UTILITY SERVICES WITHIN  
THE LIMITS OF WORK MUST ALSO BE FIELD LOCATED PRIOR TO EXCAVATION WORK.  
CONTRACTORS ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE  
PLAN INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO TAKE ALL PREVENTIVE  
MEASURES TO PROTECT THE LINES IN ACCORDANCE WITH THE PA ONE-CALL ACT.



AQUA WATER SERVICE NOTES:

- THE SITE CONTRACTOR AND PLUMBING CONTRACTOR IS RESPONSIBLE TO BE FULLY KNOWLEDGEABLE WITH ALL AQUA STANDARDS AND REQUIREMENTS.
- AQUA WILL MAKE ALL CONNECTIONS TO ITS MAIN AND FURNISH, INSTALL THE SERVICE LINE FROM THE WATER MAIN TO THE CURB STOP AND METER BOX.
- THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING, PREPARING & SUBMITTING FORMS TO AQUA FOR TEMPORARY AND PERMANENT WATER SERVICES.
- THE SITE CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL THE SERVICE LINE FROM THE CURB BOX TO WITHIN 5 FEET OF THE BUILDING.
- THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR CONNECTING THE BUILDING LINES TO THE UNDERGROUND SERVICE LINES
- DOMESTIC WATER SERVICE LINE SHALL BE 1" Ø K COPPER AND INSTALLED PER AQUA STANDARDS. K COPPER FITTINGS SHALL BE COMPRESSION OR FLARED FOR UNDERGROUND CONNECTIONS, WHILE THREAD OR SWEAT JOINTS SHALL BE USED IN PITS. FIRE LINES SHALL BE 4 INCH DUCTILE IRON PIPE AND INSTALLED PER AQUA STANDARDS. DUCTILE IRON PIPE 3" OR LARGER SHALL HAVE PUSH ON WATER-TIGHT JOINTS. WATER LINES SHALL HAVE A MINIMUM 42" OF COVER.
- AQUA REQUIRES A PRESSURE REDUCING VALVE WHERE THE COMPANY'S SYSTEM PRESSURE EXCEEDS 81 PSI ON ALL DOMESTIC SERVICES AND 150 PSI ON FIRES SERVICES AND AT THE DISCRETION OF AQUA.
- AQUA RETAINS THE RIGHT TO REQUIRE THE CUSTOMER TO INSTALL AND MAINTAIN A BACKFLOW PREVENTION DEVICE.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A FIRE SPRINKLER DESIGNER COORDINATING WITH AQUA FOR SIZING FOR FIRE LINE AT THE START OF CONSTRUCTION.



TOPSOIL & SEEDING NOTES:

- PLACE ALL SEEDING, SOIL SUPPLEMENTS AND MULCHING ITEMS IN ACCORDANCE WITH THE REQUIREMENTS OF Pa.D.O.T PUBLICATION 408 DATED 2011, SEE LANDSCAPE PLAN FOR SEED FORMULA
- AS SOON AS SLOPES, CHANNELS, DITCHES, AND OTHER DISTURBED AREAS REACH FINAL GRADE, THEY MUST BE STABILIZED IMMEDIATELY. IN ALL OTHER WATERSHED OTHER THAN A 'SPECIAL PROTECTED WATERSHED', CESSATION OF ACTIVITY FOR AT LEAST 4 DAYS REQUIRES TEMPORARY STABILIZATION. AREAS THAT WILL BE SUBJECT TO EARTHMOVING WITHIN 12 MONTHS MAY BE STABILIZED WITH TEMPORARY SEED MIXTURES, PREDOMINANTLY ANNUAL GRASSES. ALL OTHERS SHOULD BE STABILIZED WITH PERMANENT SEED MIXTURES – PREDOMINANTLY PERENNIAL GRASSES. WHEN FINAL GRADE IS ACHIEVED DURING NON-GERMINATING MONTHS, THE AREA SHOULD BE MULCHED UNTIL THE BEGINNING OF THE NEXT PLANTING SEASON.
- HOWEVER, THE AREA WILL NOT BE CONSIDERED STABILIZED UNTIL A MINIMUM UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED. CRITICAL AREAS : ERODIBLE SOILS, WITHIN 50 FEET OF A SURFACE WATER, ETC. SHOULD BE BLANKETED.
- TEMPORARY EROSION CONTROL BMP'S THAT WERE INSTALLED FOR THE EARTHMOVING PHASE OF THE PROJECT MUST REMAIN IN PLACE AND BE MAINTAINED IN WORKING ORDER UNTIL PERMANENT STABILIZATION IS ACHIEVED. NOTE: AREAS THAT DO NOT RECEIVE SUFFICIENT SUNLIGHT TO SUPPORT VEGETATION (E.G. UNDER BRIDGE DECKS) SHOULD BE STABILIZED BY SOME MEANS OTHER THAN VEGETATION.
- AS DISTURBED AREAS WITHIN A PROJECT APPROACH FINAL GRADE, THE CONTRACTOR SHOULD MAKE PREPARATIONS FOR SEEDING AND MULCHING TO BEGIN (I.E. ANTICIPATE THE COMPLETION DATE AND SCHEDULE THE SEEDER). IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED. WAITING UNTIL EARTHMOVING IS COMPLETED BEFORE MAKING PREPARATIONS FOR SEEDING AND MULCHING IS NOT ACCEPTABLE.
- SURFACE PREPARATION PRIOR TEMPORARY AND PERMANENT VEGETATIVE SURFACE STABILIZATION.

- THE FOLLOWING ACTIVITIES SHALL BE UNDERTAKEN TO ACHIEVE STABILIZATION OF ALL EXPOSED AND DISTURBED SOIL AREAS AS REQUIRED OR DIRECTED.
  - TILLING - UPON SUSPENSION OF GRADING ACTIVITIES IN DISTURBED AREAS, SURFACE SOIL SHALL BE TILLED AND LOOSENED. TILLING MAY BE OMITTED IF SOIL IS SUFFICIENTLY LOOSE TO PERMIT SEEDING ACTIVITIES.
  - LIME APPLICATION - GROUND LIMESTONE SHALL BE APPLIED TO THE LOOSENED SOIL AT A UNIFORM RATE WITH AGRICULTURAL GRADE LIMESTONE PER THE E&S PLAN.
  - FERTILIZER APPLICATION - FERTILIZER SHALL BE APPLIED TO THE LOOSENED SOIL AT A UNIFORM RATE PER THE E&S PLAN

TEMPORARY STABILIZATION WITH SEEDING

- TEMPORARY SEED MIXTURE SHALL BE APPLIED TO THE PREPARED SOIL SURFACE BY BROADCAST SPREADERS OR HYDRAULIC APPLICATION ACCORDING TO THE RATES OF APPLICATION SHOWN ON THE STANDARD E&S WORKSHEET #21. AFTER SEEDING, SEED SHALL BE COVERED BY MEANS OF LIGHT RAKING TO A DEPTH OF ONE QUARTER INCH OF SOIL.
- STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN THE HAY INTO THE SOIL- ABOUT 3 INCHES ON SLOPES NO STEEPER THAN 3H:1V. THE MACHINERY SHOULD ? CRIMP? IMPLEMENT MAY BE USED TO BE OPERATED ON THE CONTOUR. (NOTE: CRIMPING OF HAY OR STRAW BY RUNNING OVER IT WITH TRACKED MACHINERY IS NOT RECOMMENDED.) SYNTHETIC BINDERS OR CHEMICAL BINDERS MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THEY ARE NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES. MULCH ON SLOPES OF 8% OR STEEPER SHOULD BE HELD IN PLACE WITH NETTING. LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

TEMPORARY STABILIZATION WITH MULCH DURING NON-GERMINATION PERIODS

DURING NON-GERMINATION PERIODS, MULCH MUST BE APPLIED TO DISTURBED AREAS. THE NON-GERMINATION PERIOD IS GENERALLY THE PERIOD FROM OCTOBER 15 TO MARCH 15. AREAS MULCHED DURING NON-GERMINATION PERIODS MUST BE LIMED, FERTILIZED, SEEDED AND MULCHED IMMEDIATELY.

PERMANENT VEGETATIVE SURFACE STABILIZATION

- BEFORE THE SEEDING BEGINS, TOPSOIL SHOULD BE APPLIED AND ANY REQUIRED SOIL AMENDMENTS WORKED INTO THE SOIL TO A DEPTH OF 4 TO 6 INCHES. TOPSOIL SHOULD NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION. COMPACTED SOILS SHOULD BE SCARIFIED 6 TO 12 INCHES ALONG CONTOUR WHEREVER POSSIBLE PRIOR TO SEEDING
- PERMANENT SEEDING -SEED MIXTURE SHALL BE APPLIED TO THE PREPARED SOIL SURFACE BY BROADCAST SPREADERS OR HYDRAULIC APPLICATION ACCORDING TO THE RATES OF APPLICATION SHOWN ON THE STANDARD E&S WORKSHEET #21. AFTER SEEDING, SEED SHALL BE COVERED BY MEANS OF LIGHT RAKING TO A DEPTH OF ONE QUARTER INCH OF TOPSOIL.
- STRAW AND HAY MULCH SHOULD BE ANCHORED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN THE HAY INTO THE SOIL- ABOUT 3 INCHES ON SLOPES NO STEEPER THAN 3H:1V. THE MACHINERY SHOULD ?CRIMP? IMPLEMENT MAY BE USED TO BE OPERATED ON THE CONTOUR. (NOTE: CRIMPING OF HAY OR STRAW BY RUNNING OVER IT WITH TRACKED MACHINERY IS NOT RECOMMENDED.) SYNTHETIC BINDERS OR CHEMICAL BINDERS MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THEY ARE NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES. MULCH ON SLOPES OF 8% OR STEEPER SHOULD BE HELD IN PLACE WITH NETTING. LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

MAINTENANCE OF E&S CONTROL FACILITIES:

- INSPECTION SCHEDULE: INSPECT ALL BMP'S ON A WEEKLY BASIS AND AFTER EACH STORM WATER EVENT.
- MAXIMUM SEDIMENT STORAGE LEVEL IN BMP'S:
  - COMPOST SILT SOCK - ½ HEIGHT OF SOCK
  - ROCK FILTER OUTLET - ½ HEIGHT OF OUTLET
  - INLET PROTECTION - ½ FULL OR FLOODING/BYPASS OCCURS
  - COMPOST SOCK WASHOUT - ½ HEIGHT OF SOCK
- MAINTENANCE/REPAIR TIME FRAME: ALL BMP'S SHALL BE MAINTAINED THROUGHOUT THE PROJECT UNTIL THE SITE IS COMPLETELY STABILIZED. ANY NEEDED REPAIRS MUST BE MADE IMMEDIATELY TO MAINTAIN ALL FACILITIES AS DESIGNED.
- SEEDED AREAS: FERTILIZE AND RESEED AS NECESSARY TO MAINTAIN A DENSE VEGETATIVE COVER.
- ALL MULCHED AREAS WILL BE FREQUENTLY CHECKED AND CLOSELY MONITORED WITH RESPECT TO THEIR EFFECTIVENESS IN CONTROLLING EROSION STORM RUNOFF VELOCITIES AND SEDIMENT TRANSPORT. AREAS SHALL BE RE-MULCHED AS OFTEN AS NECESSARY UNTIL ADEQUATE GROUND COVER IS ESTABLISHED.
- INLET PROTECTION - SHOULD THE FABRIC ON AN INLET PROTECTION DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, IT SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT.
- COMPOST SILT SOCKS, SILT BARRIER FENCE AND/OR SEDIMENT FILTER LOG: SHOULD THE FABRIC ON AN SILT FENCE OR BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, IT SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT.
- ROCK CONSTRUCTION ENTRANCE: ADD NEW STONE AS REQUIRED.
- KEEP ALL ROADWAYS, ADJACENT PROPERTIES, AND WATER COURSES FREE FROM ALL DEBRIS, DROPPINGS AND SEDIMENT. IMMEDIATELY REMOVE ANY SUCH OCCURRENCES.
- DISPOSAL: UNSUITABLE MATERIAL SHALL BE HAULED FROM THE SITE FOR PROPER DISPOSAL
- THE CONTRACTOR MUST MAINTAIN A WRITTEN LOG DOCUMENTING ALL INSPECTION DATES, INSPECTED BMP'S AND LIST OF ALL REPAIR /REPLACEMENT MEASURES TAKEN.

DCCD STANDARD E&S NOTES:

- VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY TO NOR EXIT DIRECTLY FROM SITE ONTO PUBLIC ROAD
- STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
- THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED UNTIL THE SITE ACHIEVES FINAL STABILIZATION, THE OPERATOR SHALL ASSURE THAT THE BEST MANAGEMENT PRACTICES ARE IMPLEMENTED, OPERATED, AND MAINTAINED PROPERLY AND COMPLETELY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL BEST MANAGEMENT PRACTICE FACILITIES. THE OPERATOR SHALL MAINTAIN AND MAKE AVAILABLE TO LOCAL CONSERVATION DISTRICT COMPLETE, WRITTEN INSPECTION LOGS OF ALL THOSE INSPECTIONS. ALL MAINTENANCE WORK, INCLUDING CLEANING, REPAIR, REPLACEMENT, REGRADING, AND RE-STABILIZATION SHALL BE PERFORMED IMMEDIATELY.
- IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
- BEFORE INITIATING ANY REVISIONS TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE LOCAL CONSERVATION DISTRICT.
- THE OPERATOR SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED, APPROVED BY THE LOCAL CONSERVATION DISTRICT, AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOIL AND/OR ROCK SPOIL AND BORROW AREAS, REGARDLESS OF THEIR LOCATIONS.
- ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER NON-DISTURBED AREAS.
- THE OPERATOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS OF THE APPENDIX 64, EROSION CONTROL RULES AND REGULATIONS, TITLE 25, PART 1, DEPARTMENT OF ENVIRONMENTAL PROTECTION, SUBPART C, PROTECTION OF NATURAL RESOURCES, ARTICLE III, WATER RESOURCES, CHAPTER 102, EROSION CONTROL.
- A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
- THE E&S CONTROL PLAN MAPPING MUST DISPLAY A PA ONE CALL SYSTEM INCORPORATED SYMBOL INCLUDING THE SITE IDENTIFICATION NUMBER.
- ONLY LIMITED DISTURBANCE WILL BE PERMITTED TO PROVIDE ACCESS TO SITE FOR GRADING AND ACQUIRING BORROW TO CONSTRUCT THOSE BMP'S.
- EROSION AND SEDIMENT BMP'S MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMP'S.
- AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMP CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE BMP'S MUST BE STABILIZED IMMEDIATELY.
- IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
- AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
- SEDIMENT BASINS (IF APPLICABLE)
  - APPROVAL OF THE USE OF SKIMMER(S) DOES NOT APPROVE USE OF ANY SKIMMER(S) IN VIOLATION OF ANY PATENT, PATENT RIGHTS, AND/OR PATENT LAW.
  - BAFFLES MUST BE INSTALLED TO ALLOW BASIN MAINTENANCE AND CLEAN OUT.
  - UPON INSTALLATION OF THE TEMPORARY SEDIMENT BASIN RISER(S), AN IMMEDIATE INSPECTION OF THE RISER(S) SHALL BE CONDUCTED BY A QUALIFIED SITE REPRESENTATIVE AND LOCAL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING THAT THE RISER IS SEALED.
  - SEDIMENT BASINS MUST BE PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES.

OTHER BMP'S

- SEDIMENT MUST BE REMOVED FROM STORM WATER INLET PROTECTION AFTER EACH RUNOFF EVENT.
- AT STREAM CROSSINGS, 50 FOOT BUFFER AREAS SHOULD BE MAINTAINED. ON BUFFERS, CLEARING, SOD DISTURBANCES, EXCAVATION, AND EQUIPMENT TRAFFIC SHOULD BE MINIMIZED. ACTIVITIES SUCH AS STACKING LOGS, BURNING CLEARED BRUSH, DISCHARGING RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REFUELING AND MAINTAINING EQUIPMENT SHOULD BE ACCOMPLISHED OUTSIDE OF BUFFERS.

TEMPORARY STABILIZATION & PERMANENT STABILIZATION

- HAY OR STRAW MULCH MUST BE APPLIED AT 3.0 TONS PER ACRE.
- MULCH WITH MULCH CONTROL NETTING OR EROSION CONTROL BLANKETS MUST BE INSTALLED ON ALL SLOPES 3:1 AND STEEPER.
- STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT CHOPPED OR FINELY BROKEN.
- UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMP'S MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROL BMP'S AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGARDING, RESEEDING, RE-MULCHING, AND RE-NETTING, MUST BE PERFORMED IMMEDIATELY, IF EROSION AND SEDIMENT CONTROL BMP'S FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMP'S, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
- SEDIMENT REMOVED FROM BMP'S SHALL BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN TOPSOIL STOCKPILES.

NPDES NOTES

- THE NPDES BOUNDARY IS EQUAL TO THE PROPERTY BOUNDARY AND ANY OFF-SITE AREAS OUTSIDE THE LIMITS OF DISTURBANCE AND/OR PROPERTY BOUNDARY THAT ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL SUCH AS, BUT NOT LIMITED TO, OFF-SITE UTILITIES AND ROADWAY IMPROVEMENTS.
- THE PROJECT'S RECEIVING WATERCOURSE IS LITTLE CRUM CREEK, AND THE CHAPTER 93 CLASSIFICATION IS WWF & MF.

GENERAL E&S NOTES:

- TOTAL LIMITS OF DISTURBANCE = ±2.55 ACRES
- AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL PRIOR TO PLACING FILL.
- CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMP'S SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
- TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE EITHER STOCKPILED AT THE SITE IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION OR IMPORTED TO THE SITE AS NEEDED. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS.
- IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
- ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
- A LOG SHOWING DATES THAT E&S BMP'S WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
- SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEEP INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
- ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
- ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS OR AS REQUIRED BY THE GEOTECHNICAL ENGINEER.
- FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
- SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
- ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
- UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMP'S.
- FAILURE TO CORRECTLY INSTALL E&S BMP'S, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMP'S MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO \$10,000 PER DAY IN CIVIL PENALTIES, UP TO \$10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO \$25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION
- CLEAN FILL - UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THIS INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. IT DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE SURFACE WATERS UNLESS OTHERWISE AUTHORIZED, MILLED ASPHALT, OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.

PREPAREDNESS, PREVENTION & CONTINGENCY PLAN (PPC PLAN):

- CONTRACTOR IS RESPONSIBLE TO PREPARE PPC PLAN FOR THE PROPOSED CONSTRUCTION ACTIVITIES TO PREVENT THE POTENTIAL DISCHARGE OF POLLUTANTS IN TO THE STREAM.
- SUBMIT PPC PLAN TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCING EARTH DISTURBANCE

SEQUENCE OF EARTH MOVING OPERATIONS:

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.

AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE CONTRACTOR SHALL INVITE ALL OTHER CONTRACTORS INVOLVED IN THESE ACTIVITIES, THE LANDOWNER, AND ALL APPROPRIATE MUNICIPAL OFFICIALS, TO SCHEDULE AN ON-SITE MEETING.

AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PA ONE CALL SYSTEM INC. AT 1-800-242-1776 OR 811 FOR BURIED UTILITIES LOCATIONS.

NO FIELD REVISIONS TO THE APPROVED E&S PLANS ARE ALLOWED UNLESS APPROVAL IS RECEIVED BY THE LOCAL COUNTY CONSERVATION DISTRICT.


- THE SITE CONTRACTOR SHALL BE RESPONSIBLE TO KEEP DIRT/MUD OFF OF PUBLIC ROADS. IF THE SITE CONTRACTOR FAILS TO DO SO, THEN THE OWNER SHALL REQUIRE THE CONTRACTOR TO INSTALL THE TEMPORARY ROCK CONSTRUCTION ENTRANCE/TIRE SCRUBBER AS DESIGNATED ON THE PLANS. ACCESS TO THIS SITE SHALL BE LIMITED TO THE CONSTRUCTION ENTRANCE SHOWN ON THE PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PROTECTION OF TRAFFIC TO ENSURE SEDIMENT IS NOT TRACKED ONTO TO PUBLIC ROADS.
- INSTALL ORANGE BARRIER FENCE TO DELINEATE THE LIMITS OF DISTURBANCE.
- INSTALL ALL TEMPORARY COMPOST FILTER SOCK WITHIN THE DESIGNATED LIMITS OF DISTURBANCE AS INDICATED ON THE E&S CONTROL PLAN.
- CLEAR, GRUB, STRIP AND STOCKPILE TOPSOIL FOR THOSE AREAS TO BE GRADED AS SHOWN ON THE E&S CONTROL PLANS. STRIPPING OF TOPSOIL SHALL BE KEPT TO A MINIMUM FOR THOSE AREAS BEING RE-GRADED AT A GIVEN TIME. STOCKPILES SHALL BE PLACED IN AN AREA NOT SUBJECT TO EROSION AND SURROUNDED BY A SILT FENCE ALONG THE DOWN SLOPE PERIMETER. EXCESS TOPSOIL TO BE HAULED OFF SITE TO AN APPROVED NPDES SITE/FACILITY.
- INITIATE ROUGH GRADING ACTIVITIES REQUIRED TO ACHIEVE THE PROPOSED GRADES AS SHOWN ON THE E&S CONTROL PLANS. DISTURBANCE SHALL BE LIMITED ONLY TO THAT AREA BEING GRADED AT A GIVEN TIME. GRADE SITE SO AS NOT TO TRAP WATER UPSTREAM OF EROSION CONTROL DEVICES.
- INSTALL INLETS/STORM SEWER SYSTEM AND INLET FILTERS. IF NECESSARY, TEMPORARILY PLUG ALL STORM STRUCTURES AND PIPE OPENINGS
- EXCAVATE AND CONSTRUCT ON-SITE IMPROVEMENTS INCLUDING UNDERGROUND UTILITIES, UNDERGROUND BASINS (CRITICAL STAGE), BUILDING, CURBING, AND LIGHT FOUNDATIONS. BACKFILL BUILDING FOUNDATION AS SOON AS POSSIBLE. CONTRACTOR MUST PROVIDE ADEQUATE DE-WATERING OF ANY TRENCHES THAT ENCOUNTER GROUNDWATER. INSTALL DRIVEWAY STONE BASE OVER PARKING LOT SUBGRADE AREAS AS TEMPORARY STABILIZATION AS SOON AS GRADE IS ESTABLISHED.
- CONSTRUCT/INSTALL PAVEMENT BINDER COURSE, CRITICAL STAGE - RAIN GARDEN, FINAL SITE GRADING. INSTALL BITUMINOUS PAVING AND CONCRETE. IMPLEMENT TEMPORARY VEGETATIVE STABILIZATION PROCEDURES.
- AS CONSTRUCTION PROGRESSES, MAINTAIN SHEET FLOW OF SURFACE RUNOFF TOWARD THE COMPOST FILTER SOCK.
- ONCE SITE IS BROUGHT TO GRADE, REMOVE INLET CAPS AND INSTALL INLET PROTECTION.
- COMMENCE REPLACEMENT OF TOPSOIL, LANDSCAPING, AND COMPLETE PERMANENT VEGETATIVE STABILIZATION OF ALL DISTURBED AREAS WHICH ARE AT FINAL GRADE.
- INSTALL WEARING COURSE IN PAVED AREAS.
- WHEN SITE IS AT 70% UNIFORM PERENNIAL VEGETATIVE COVER, REMOVAL OF TEMPORARY CONTROLS MAY COMMENCE. UPON STABILIZATION OF ALL DISTURBED AREAS REMOVE ALL E&S FACILITIES AND MEASURES, INCLUDING FILTER FABRIC FENCE, INLET FILTERS, ROCK FILTERS, ETC. STABILIZE ALL DISTURBED AREAS AFFECTED BY REMOVAL OF SILT FENCE.
- THE CONTRACTOR MUST BE FAMILIAR WITH "EROSION AND SEDIMENT POLLUTION CONTROL MANUAL" BY PADEP, DATED MARCH 2012 OR LATEST EDITION. COPIES OF THE E&S PLANS MUST BE AVAILABLE ON SITE THROUGHOUT CONSTRUCTION.

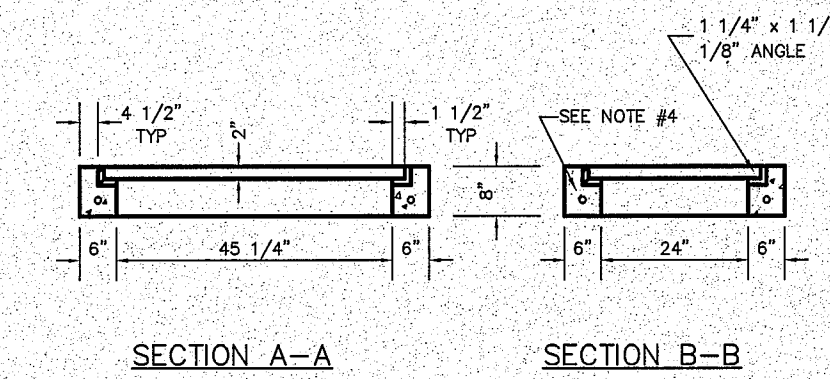
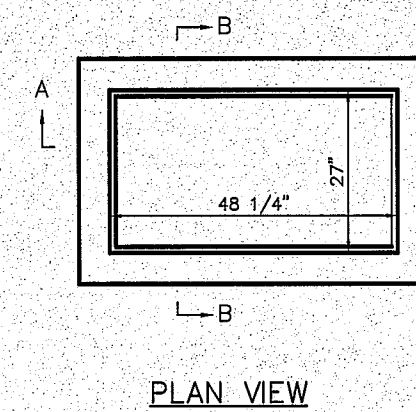
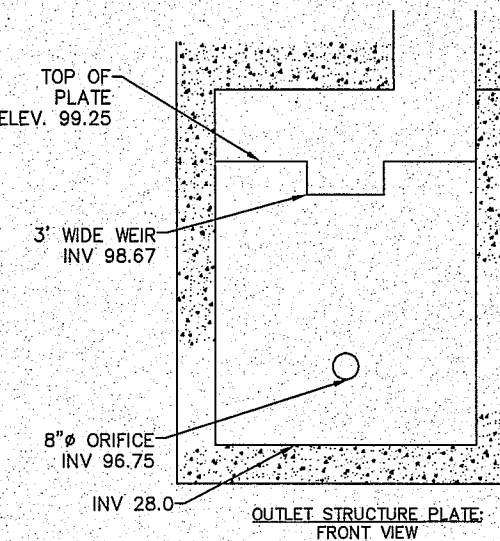
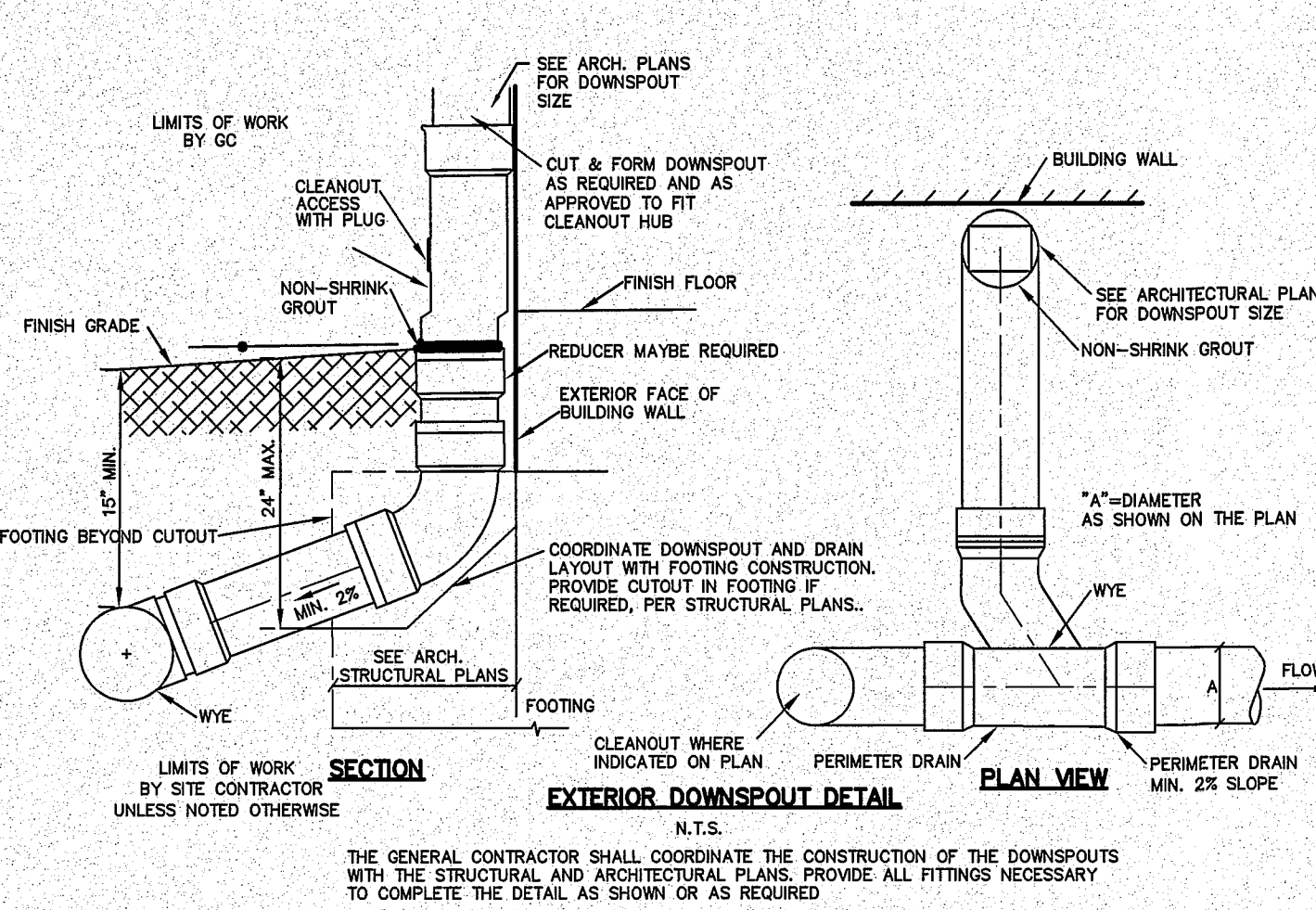
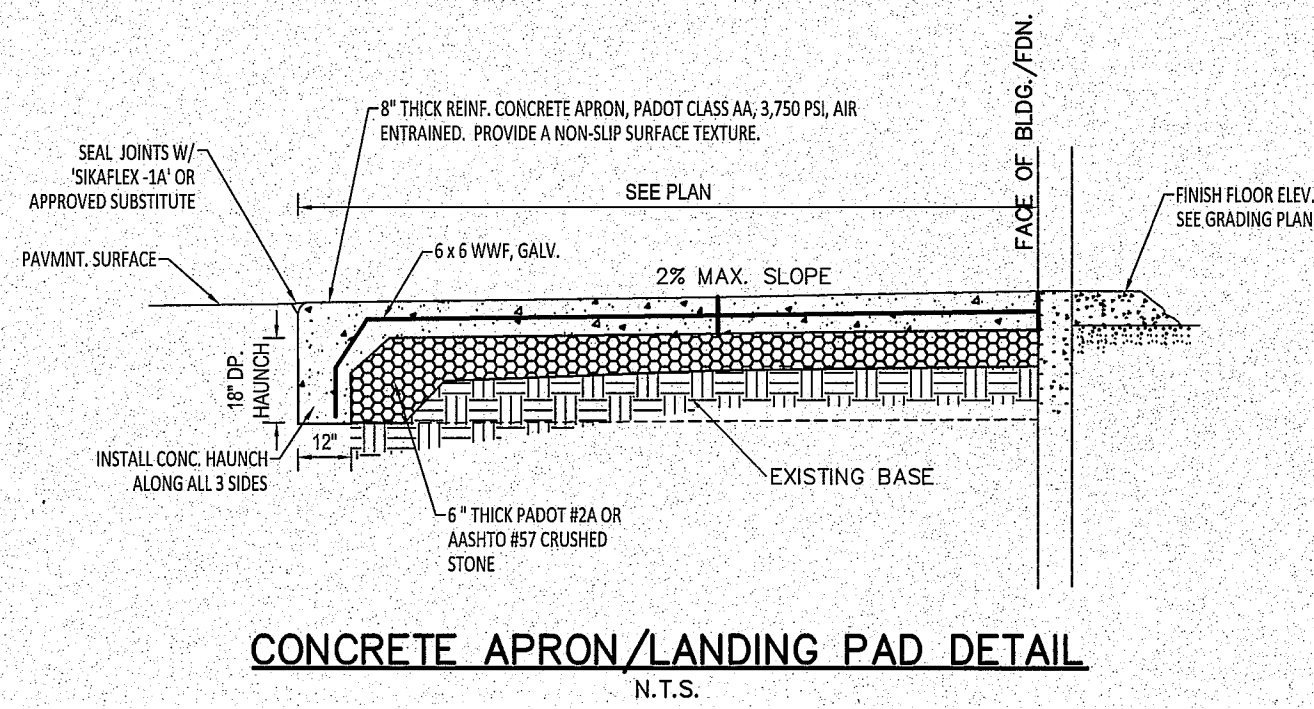
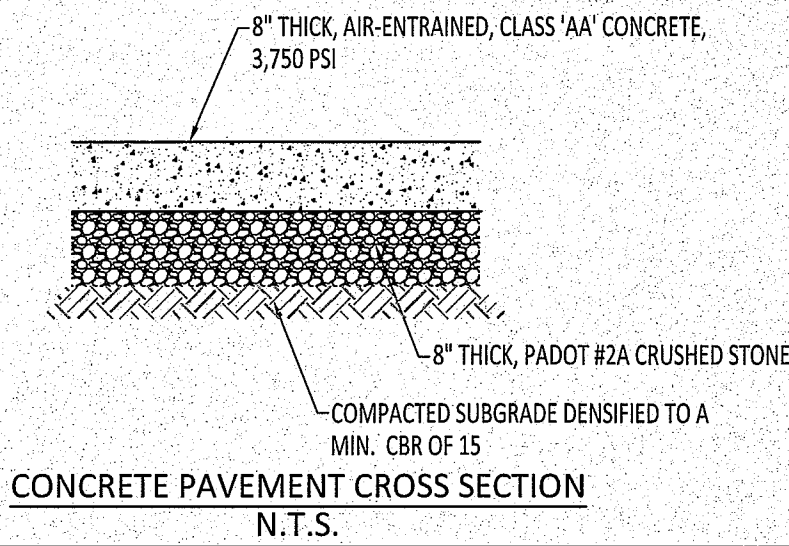
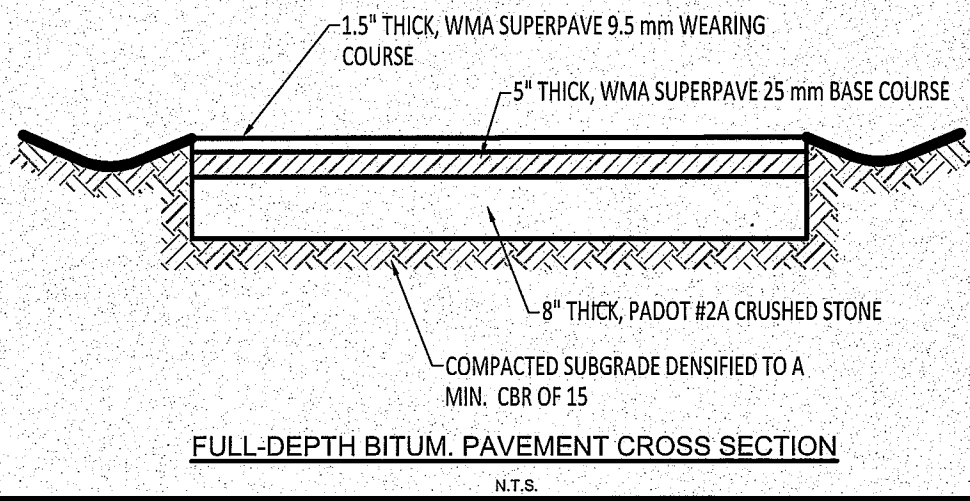
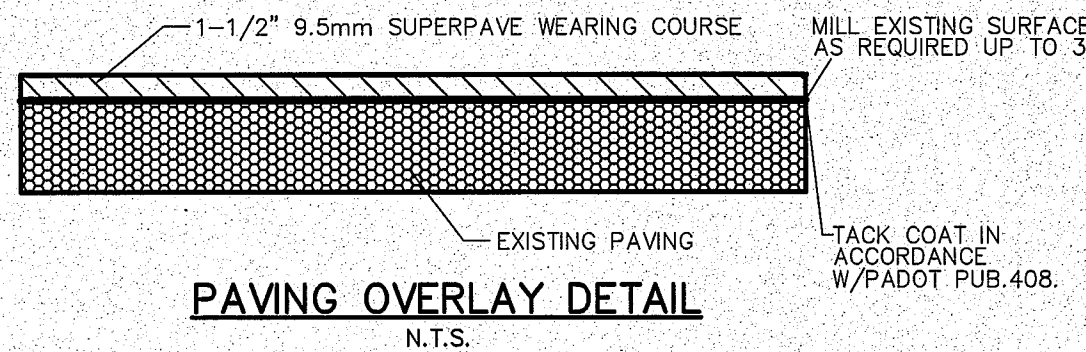
GUIDE FOR REYCLING AND DISPOSING OF CONSTRUCTION WASTE:

- THE OPERATOR SHALL PROPERLY REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE STATES SOLID WASTE MANAGEMENT REGULATIONS 25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ. AND 287.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP, OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THIS SITE.
- SOLID WASTE DISPOSAL: NO SOLID MATERIALS INCLUDING BUILDING MATERIALS ARE ALLOWED TO BE DISCHARGED FROM THE SITE WITH STORM WATER RUNOFF.
- CONCRETE WASTE: CONCRETE WASTE, UNUSED CONCRETE AND CONCRETE WASH WATER FROM READY MIX TRUCKS CAN BE DISCHARGED ON SITE SOLELY IN DESIGNATED BERMED AREAS SPECIFICALLY PREPARED TO CONTAIN THE WASH WATER AND PREVENT IT FROM BEING DISCHARGED FROM THE SITE WITH STORM WATER RUNOFF .
- DEMOLITION MATERIALS: DEMOLITION MATERIALS SHOULD BE SEPARATED INTO SALVAGEABLE MATERIALS, RECYCLABLE MATERIALS AND WASTE WHENEVER POSSIBLE.

SITE HOUSE KEEPING & MATERIALS MANAGEMENT NOTES:

- WASTE MANAGEMENT - BUILDING MATERIALS AND OTHER CONSTRUCTION SITE WASTES MUST BE PROPERLY MANAGED AND DISPOSED OF TO REDUCE THE POTENTIAL FOR POLLUTION TO SURFACE AND GROUND WATERS IN ACCORDANCE WITH 25 PA CODE § 102.4(B)(5)(XII). IT IS ILLEGAL TO BURY, DUMP, OR DISCHARGE ANY BUILDING MATERIAL OR WASTE AT THIS SITE, SUCH AS, BUT NOT LIMITED TO, CONCRETE MATERIAL, BITUMINOUS MATERIALS, ETC.

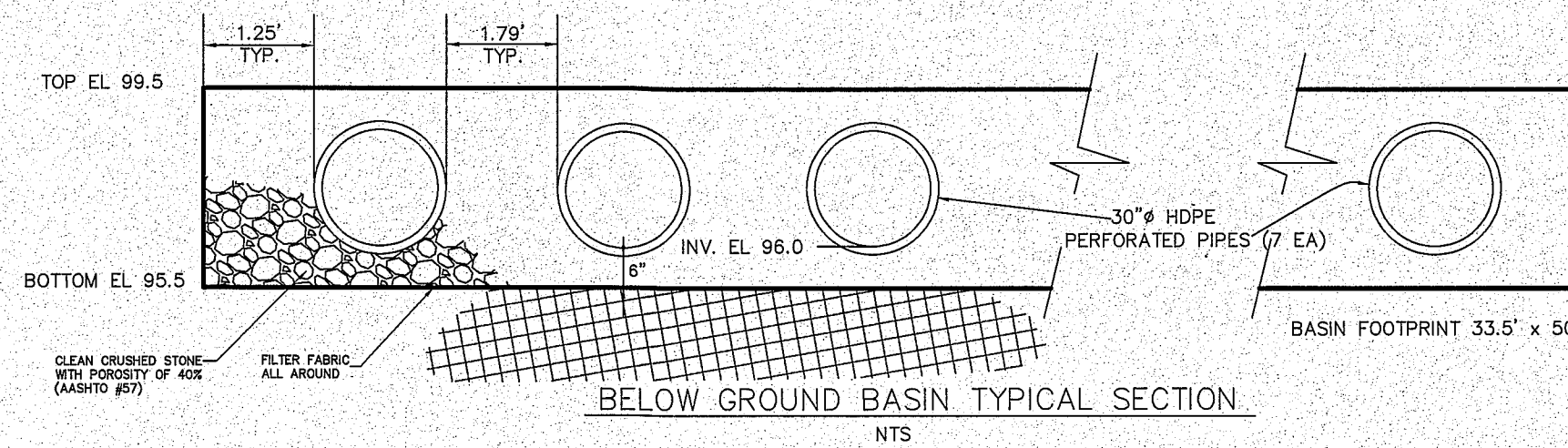
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		1		02-27-2023	PADOT HOP	AHR	AHR
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		CATANIA ENGINEERING ASSOCIATES, INC. 520 WEST MOODADE BLVD. MILFORD PARK, PA. 19033 TEL: (610) 532-2884 FAX: (610) 532-2923 EMAIL: office10@cataniaengineering.com					
CAUTION: TO INSURE VALIDITY OF PLAN, REGISTRATION SEAL MUST BE IN RED INK.		TOWNSHIP OF NETHER PROVIDENCE		DELAWARE COUNTY, PA			
DWN. BY <u>A.H.R.</u> DSG. BY _____		FIELD BOOK/PAGE		SCALE	1" = 20'		DRAWING NO. <u>83250-1096</u>
CHK. BY <u>C.J.C.</u>		DATE		DATE	11/15/22		SHEET <u>8</u> OF <u>9</u> SHEETS



**PRECAST CONCRETE INLET TOP  
TYPE M**  
N.T.S.

**DETENTION/RECHARGE BASIN CONSTRUCTION SEQUENCE NOTES:**

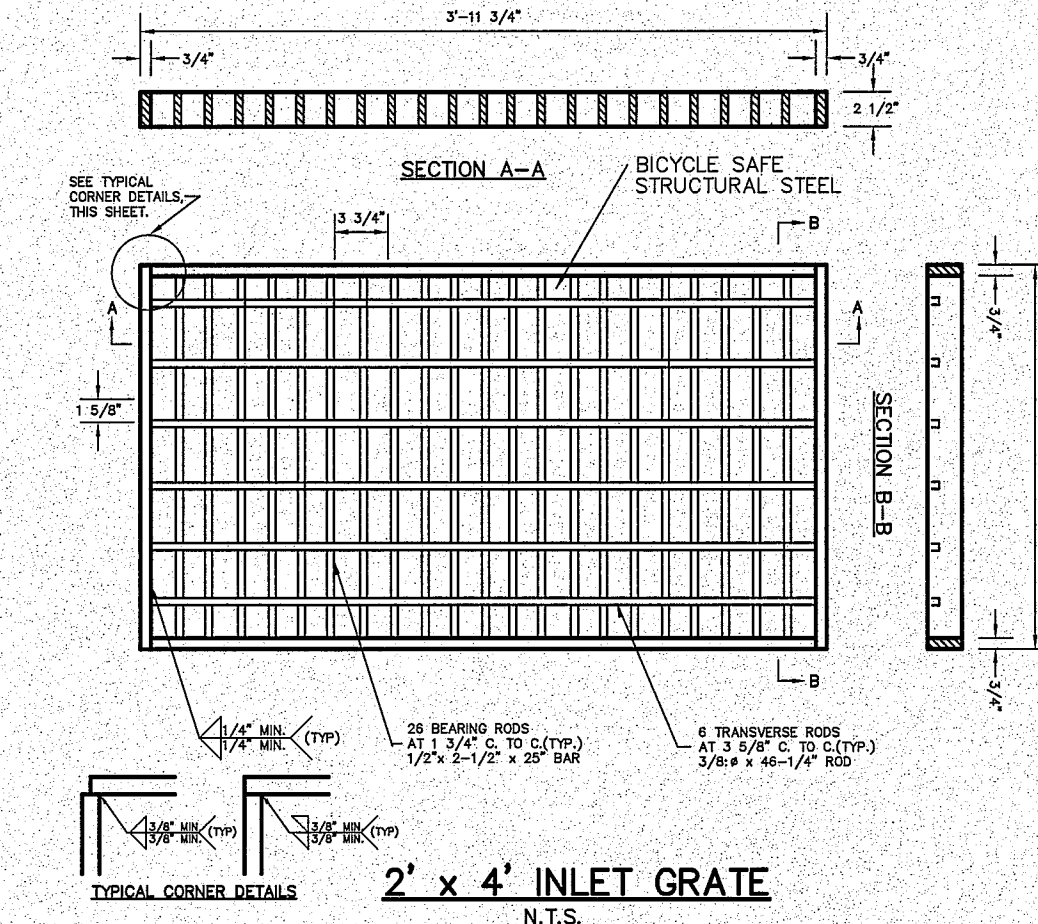
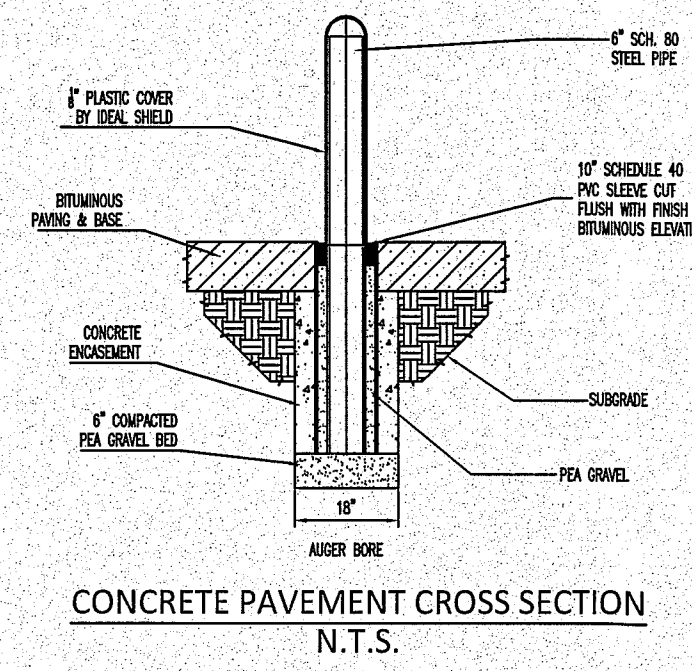
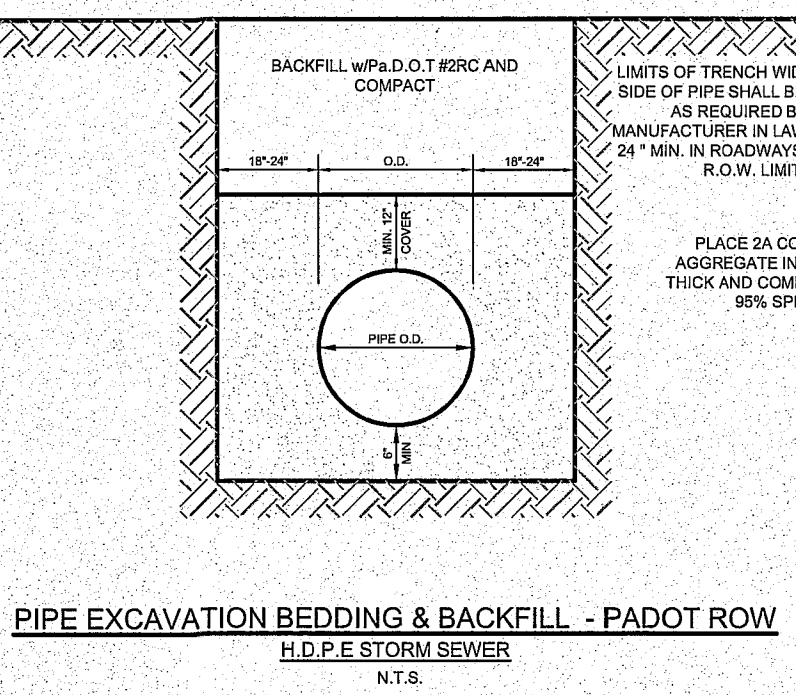
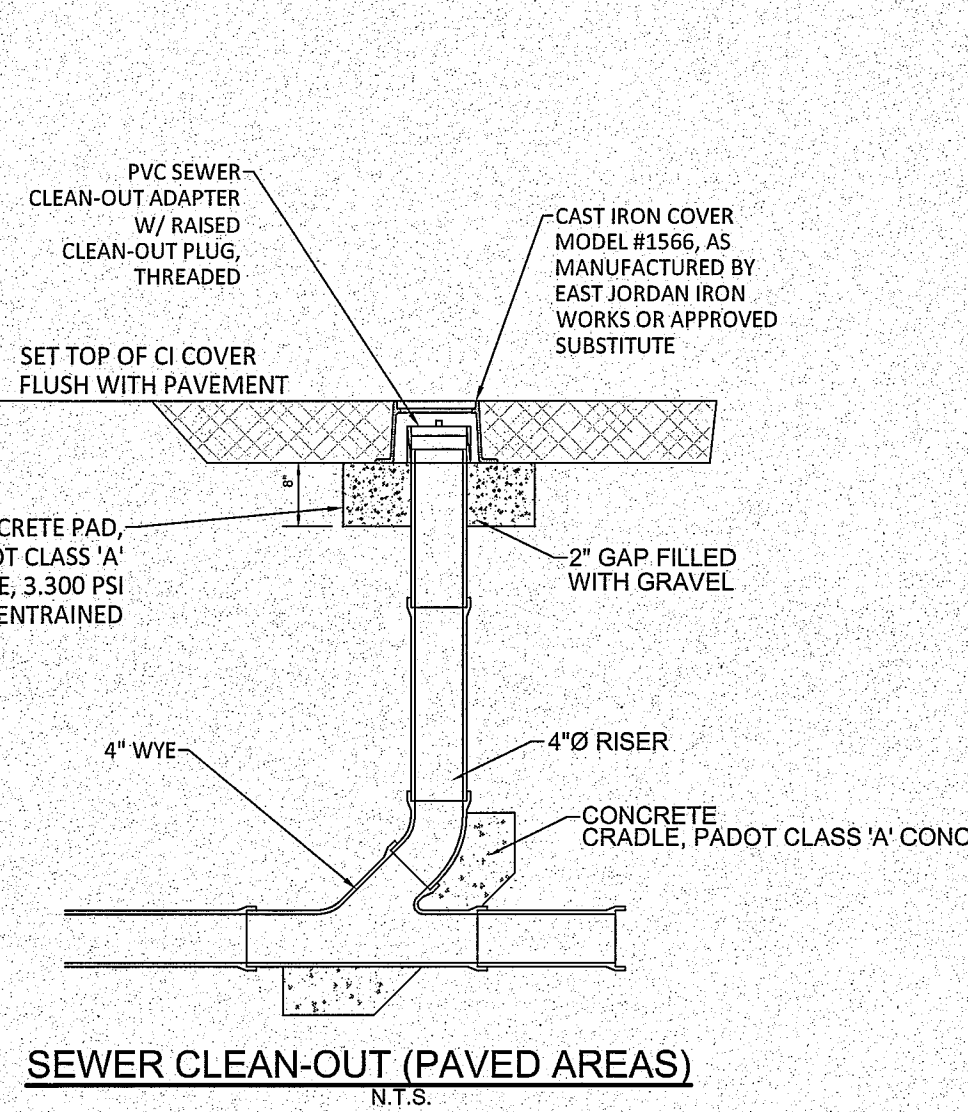
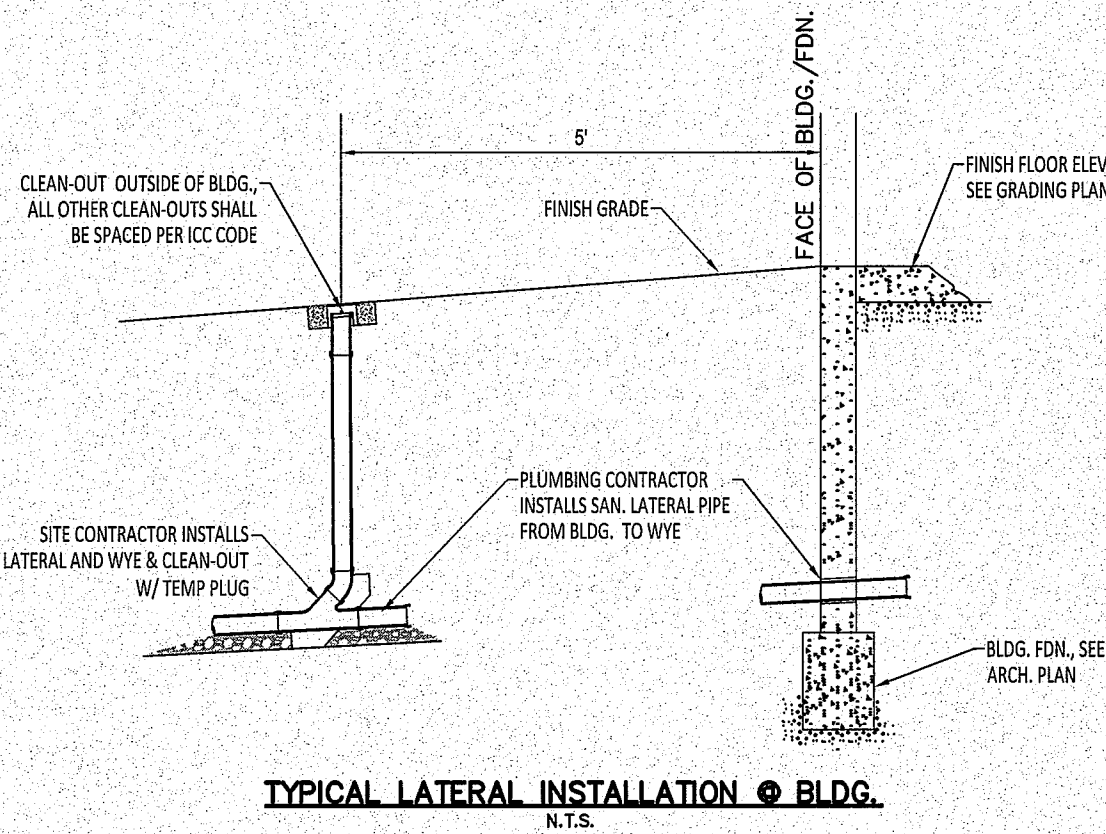
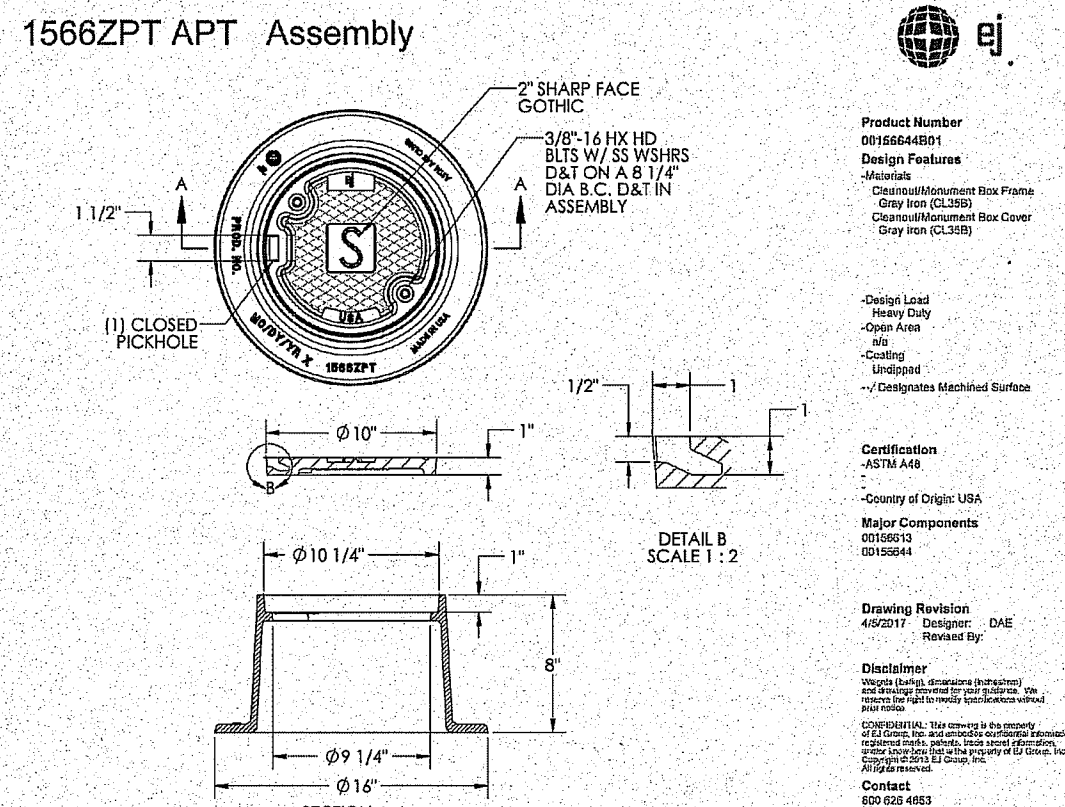
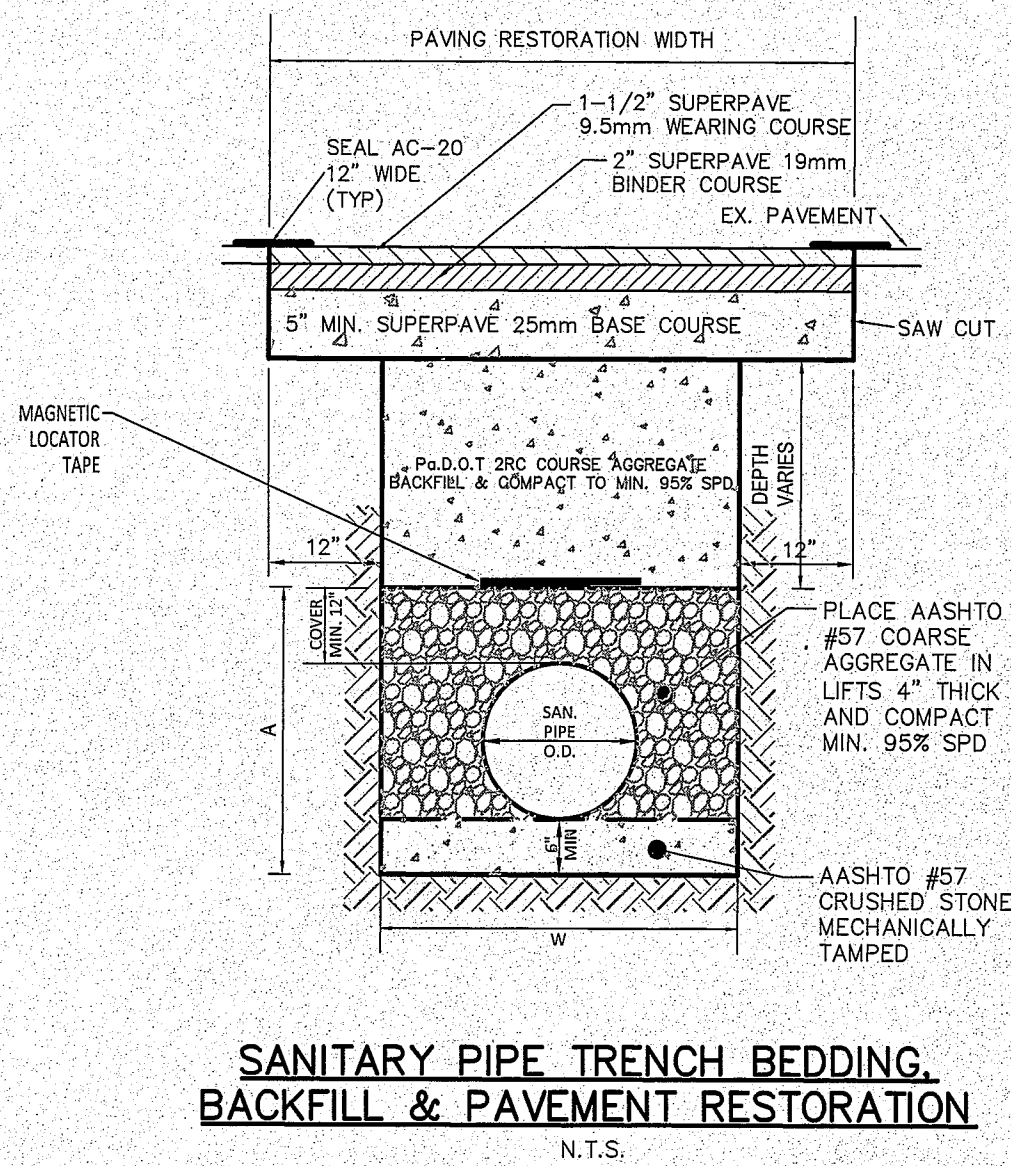
1. THE UNDERGROUND SEEPAGE BED (INFILTRATION BASIN) MAY NOT RECEIVE RUN-OFF UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA TO THE INFILTRATION SYSTEM HAS OBTAINED FINAL STABILIZATION.
2. THE EXISTING SUBGRADE UNDER THE INFILTRATION BED SHALL NOT BE COMPACTED OR SUBJECTED TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO THE PLACEMENT OF THE GEOTEXTILE FABRIC AND STONE.
3. EXCAVATION FOR THE INFILTRATION FACILITY SHALL BE PERFORMED WITH EQUIPMENT WHICH WILL NOT COMPACT THE BOTTOM OF THE BASIN.
4. THE BOTTOM OF THE BED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF AGGREGATE.
5. ONLY CLEAN AGGREGATE, FREE OF FINES, SHALL BE ALLOWED. USE AASHTO #57 STONE OR APPROVED SUBSTITUTE.
6. THE INFILTRATION BED SHOULD BE WRAPPED IN NON-WOVEN GEOTEXTILE FILTER FABRIC PER PA. STORMWATER BMP MANUAL.
7. WHERE VERTICAL WALLS ARE DIFFICULT TO MAINTAIN DURING CONSTRUCTION OF THE UNDERGROUND BASIN, BACKFILL OVEREXCAVATED AREAS WITH CRUSHED STONE.
8. IF BEDROCK OR GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, CONTACT THE DESIGN ENGINEER IMMEDIATELY FOR DESIGN ALTERATIONS TO ACCOMMODATE ADJUSTED FIELD CONDITIONS.
9. IF APPLICABLE, SEAL ALL EDGES OF WEIR PLATE WITH SILICONE CAULK AND BOLT IN PLACE WITH STAINLESS STEEL BOLTS.



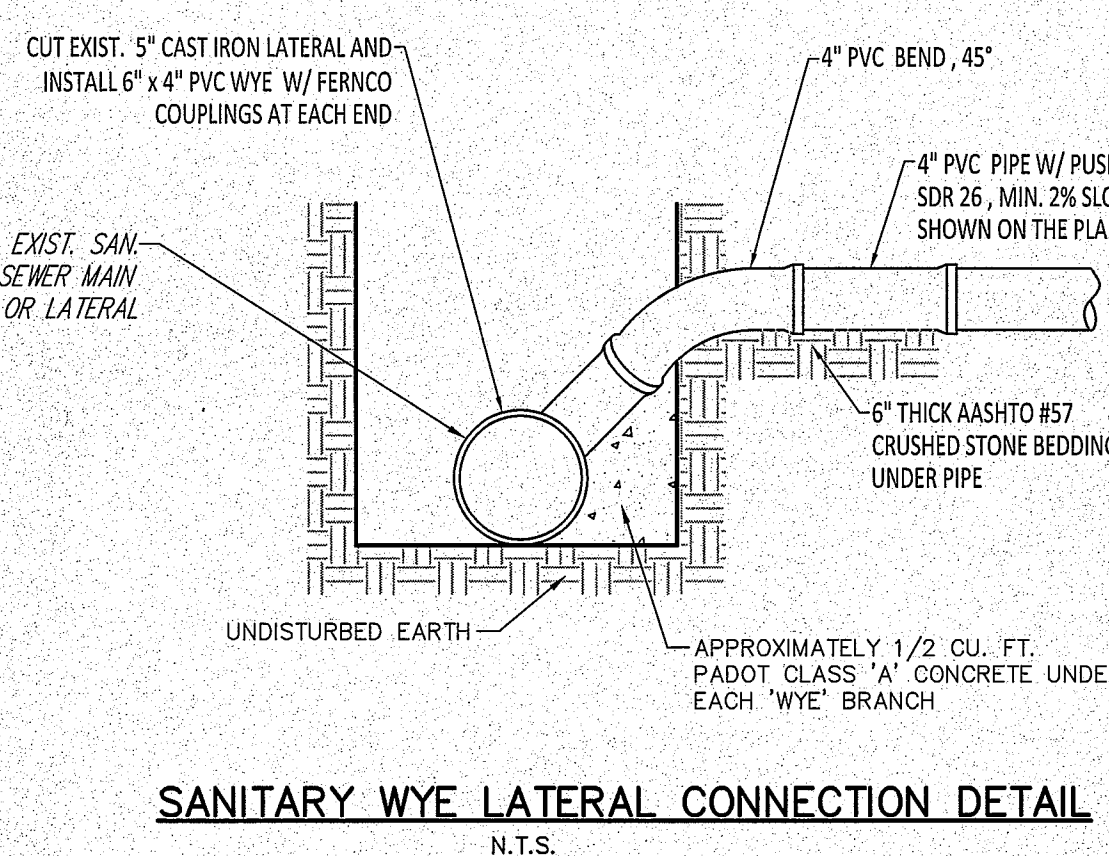
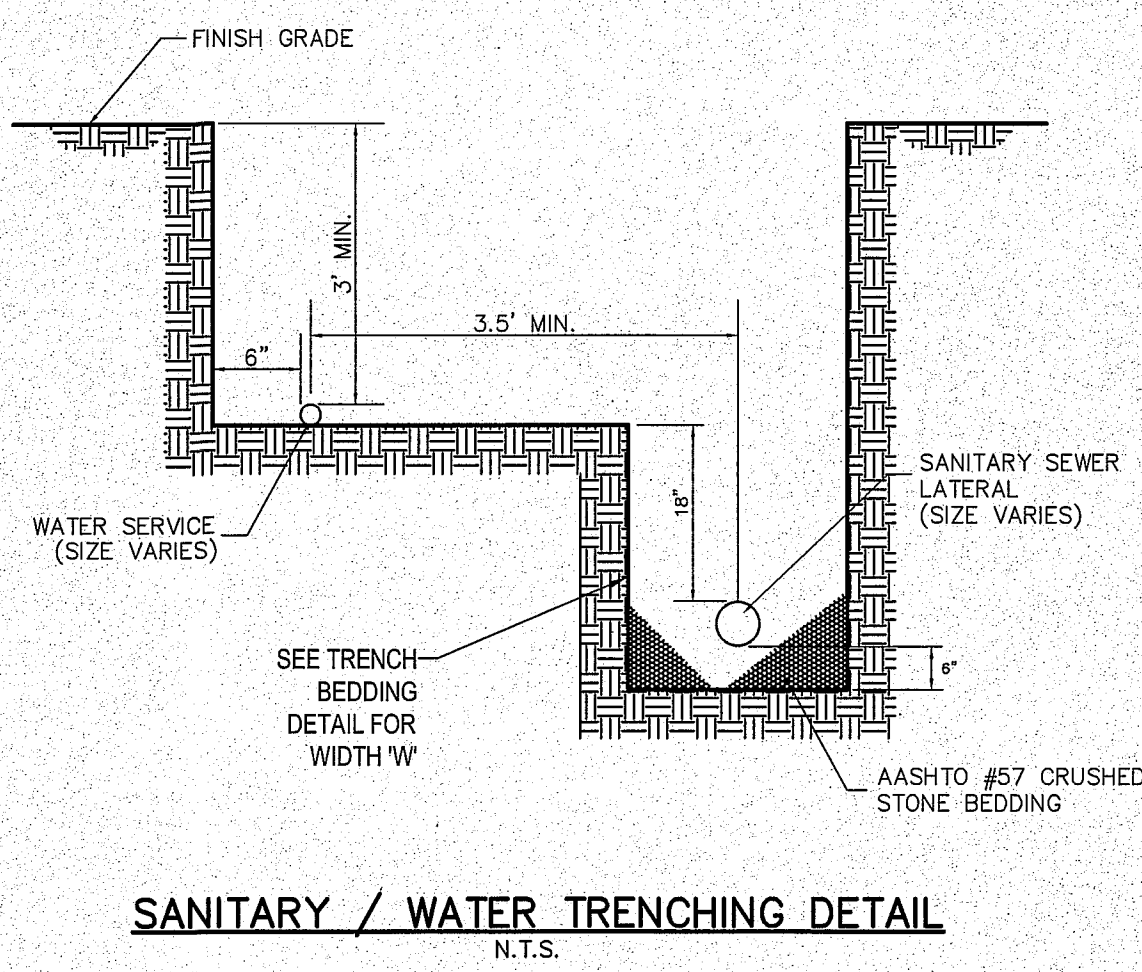
**NOTES:**

1. IN LANDSCAPED AREAS, FINISH GRADE ABOVE THE PIPE TRENCH SHALL HAVE A MIN. 6 INCHES OF TOPSOIL.
2. IN PAVED AREAS, TEMPORARY BITUMINOUS PAVEMENT CONSISTING OF 2\"/>

MINIMUM TRENCH WIDTH, "W" MEASURED FROM BOTTOM OF STONE BEDDING TO TOP OF PIPE COVER (A)	
<u>NOM. PIPE SIZE</u>	<u>TRENCH WIDTH (W), MIN.</u>
4" - 6" Ø	18"
8" Ø	24"
10" - 18" Ø	30"



INFORMATION SHOWN ON THIS PLAN IS THE RESULT OF PROFESSIONAL SERVICES AS RENDERED BY CATANIA ENGINEERING ASSOCIATES, INC. REPRODUCTION OF THIS PLAN FOR THE PURPOSE OF CREATING ADDITIONAL COPIES OR REVISING PLANS WITHOUT APPROVAL OF CATANIA ENGINEERING ASSOCIATES, INC. IS PROHIBITED. CERTIFICATION FOR THE WORK CONTAINED HEREIN IS LIMITED TO THE ENTITY FOR WHOM THE WORK WAS PERFORMED, AS OF THE DATE SHOWN ON THE PLAN.		<table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>REVISION</th> <th>DWN. BY</th> <th>CHK. BY</th> </tr> <tr> <td>2</td> <td>03-29-2023</td> <td>ISSUE FOR BID</td> <td>AHR</td> <td>AHR</td> </tr> <tr> <td>1</td> <td>02-27-2023</td> <td>PADOT HOP</td> <td>AHR</td> <td>AHR</td> </tr> </table>		NO.	DATE	REVISION	DWN. BY	CHK. BY	2	03-29-2023	ISSUE FOR BID	AHR	AHR	1	02-27-2023	PADOT HOP	AHR	AHR
NO.	DATE	REVISION	DWN. BY	CHK. BY														
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		CATANIA ENGINEERING ASSOCIATES, INC. 520 WEST MADRADE BLVD. MILMONT PARK, PA. 19033 TEL. (610) 532-2884 FAX. (610) 532-2923 EMAIL: office10@cataniaengineering.com																
<b>DETAIL SHEET</b> <b>RECYCLING CENTER</b> <b>NETHER PROVIDENCE TOWNSHIP</b>		TOWNSHIP OF NETHER PROVIDENCE DELAWARE COUNTY, PA																
CAUTION: TO INSURE VALIDITY OF PLAN, REGISTRATION SEAL MUST BE IN RED INK. DWN. BY <b>A.H.R.</b> CKD. BY <b>C.L.C.</b>		DSG. BY _____ FIELD BOOK/PAGE _____ SCALE <b>1" = 10'</b> DATE <b>11/15/22</b> DRAWING NO. <b>83250-1096</b> SHEET <b>9</b> OF <b>9</b> SHEETS																

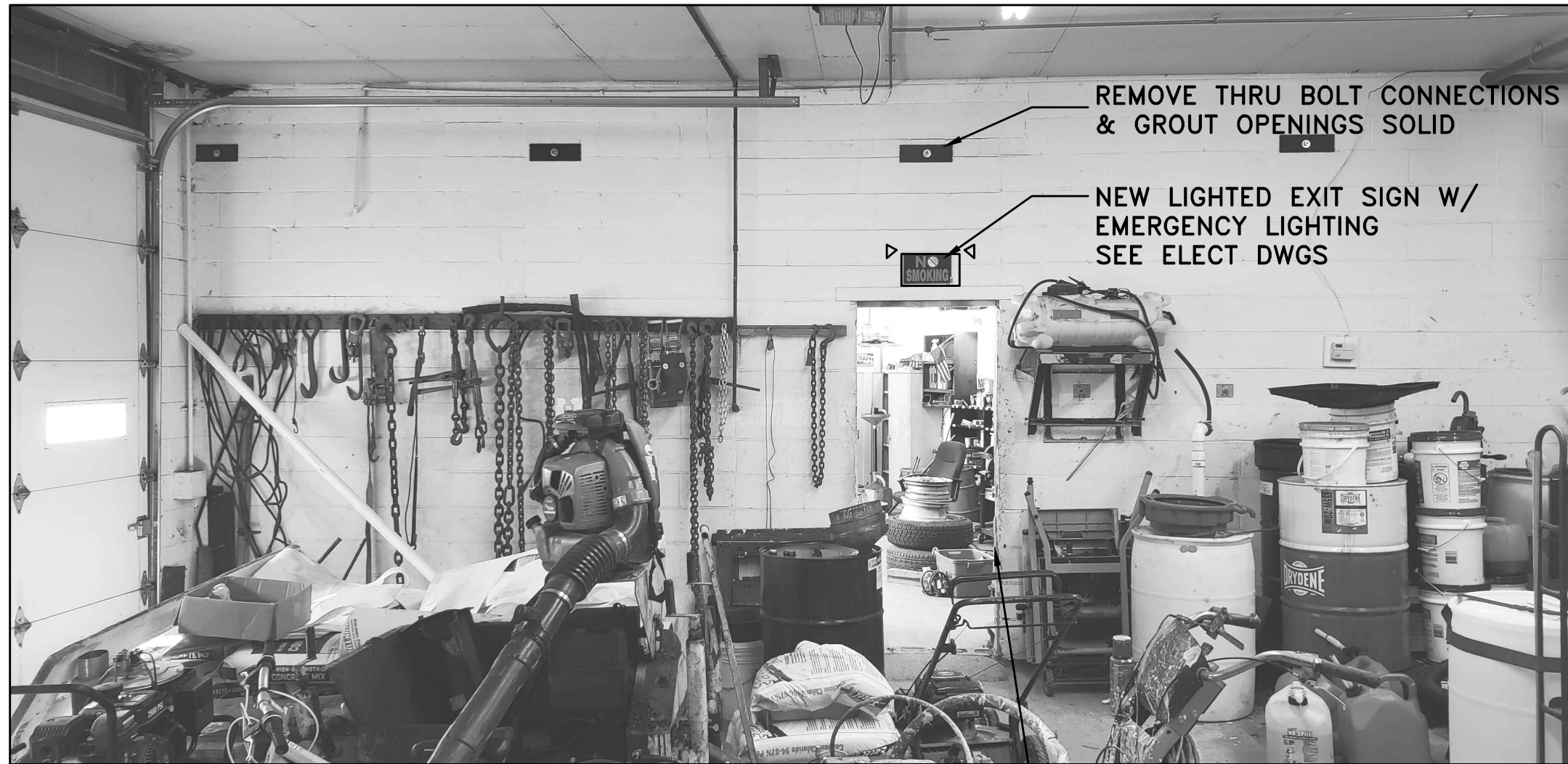




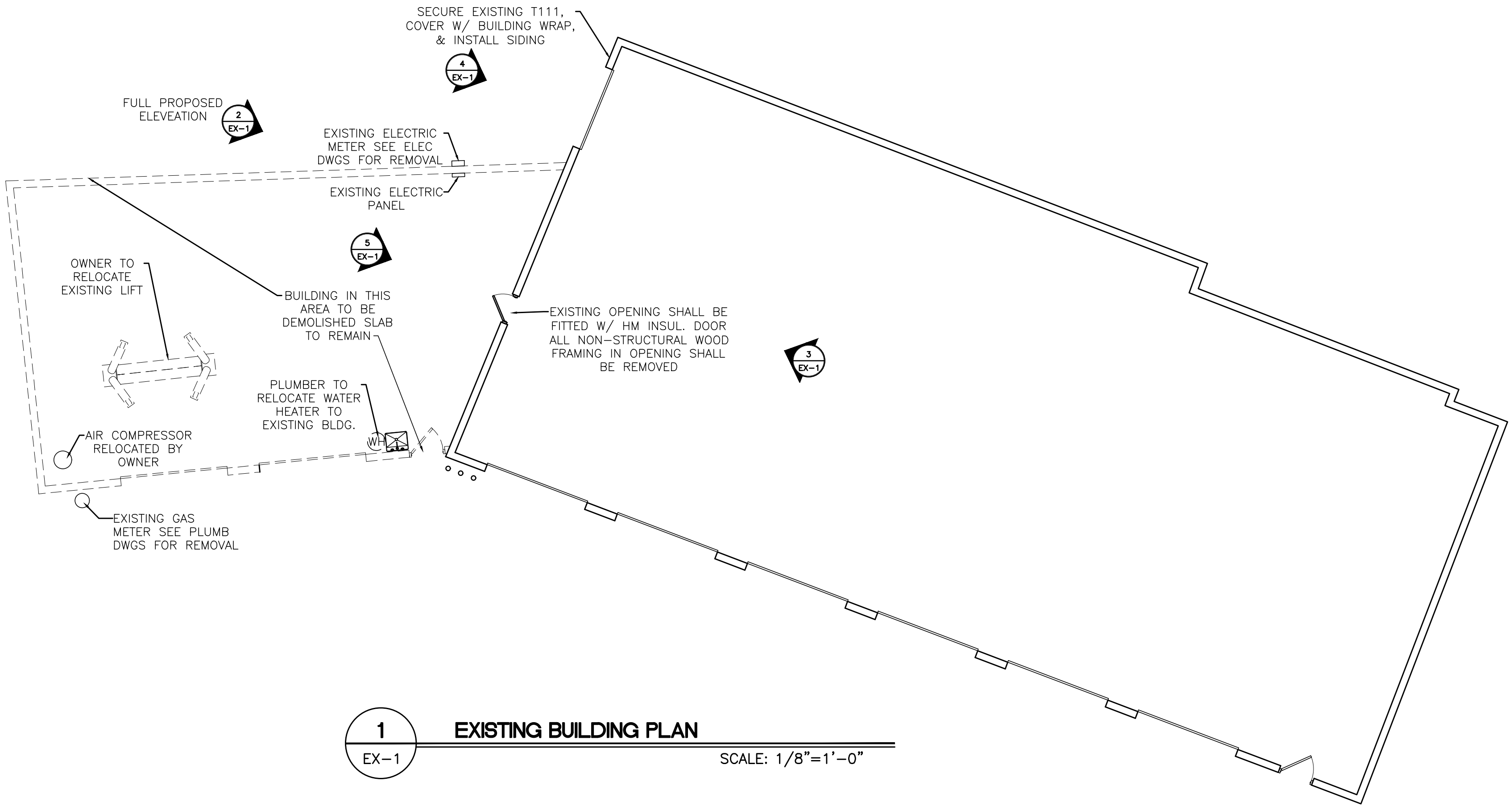
5 EXISTING INTERIOR OF GARAGE  
EX-1 GARAGE THIS SIDE TO BE DEMOLISHED SCALE: 1/8"=1'-0"



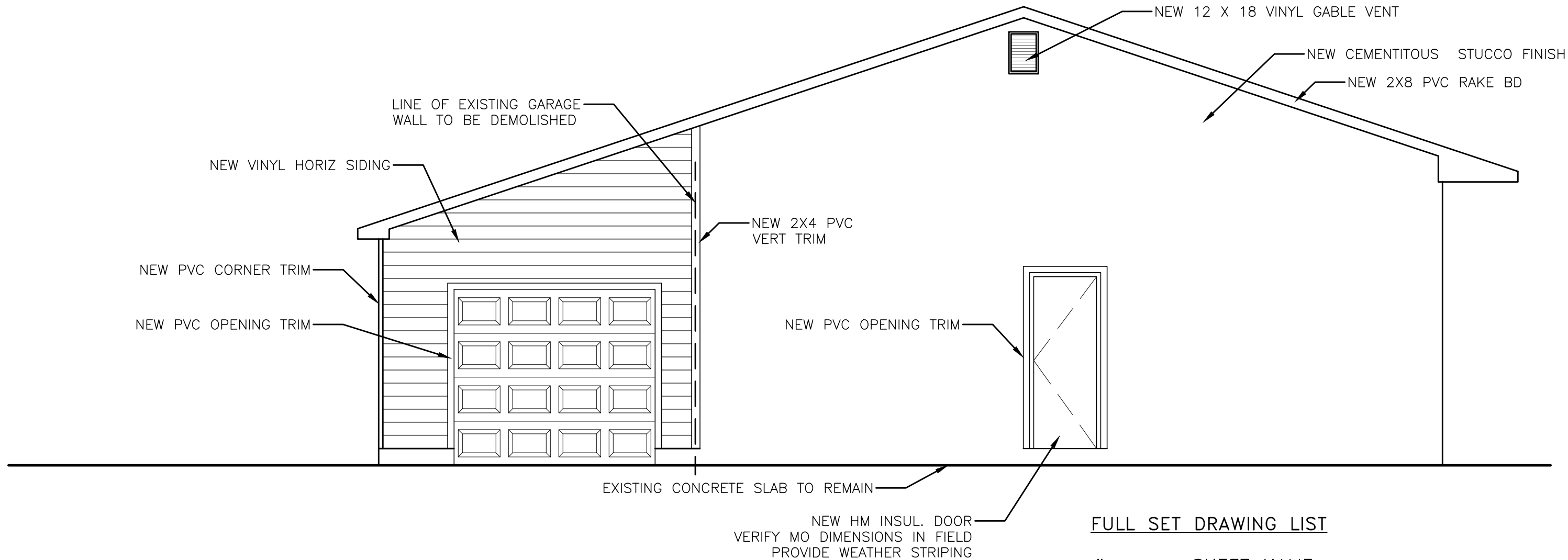
4 EXISTING EXTERIOR OF GARAGE  
EX-1 SCALE: 1/8"=1'-0"



3 EXISTING INTERIOR OF GARAGE  
EX-1 WALL SHOWN TO BECOME EXTERIOR WALL SCALE: 1/8"=1'-0"



1 EXISTING BUILDING PLAN  
EX-1 SCALE: 1/8"=1'-0"



2 PROPOSED EXTERIOR WEST ELEVATION  
EX-1 SCALE: 1/4"=1'-0"

#### 2018 INTERNATIONAL BUILDING CODE

CHAPTER 11 ACCESSIBILITY - BUILDING SHALL COMPLY W/ 2015 CHAPTER 11 & ANSI A117.1-2009  
OCCUPANCY GROUP: "S1" - STORAGE MODERATE HAZARD, MOTOR VEHICLE REPAIR AND PARKING

CONSTRUCTION TYPE VB  
TABLE 506.2 - ALLOWABLE AREA & STORIES:  
S1 OCCUPANCY - 9,000 SF/FLR @ ONE (1) STORY.  
ACTUAL BUILDING - FIRST FLOOR - 3,360 GROSS SF  
TABLE 601 - FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS  
STRUCTURAL FRAME - 0 HR.  
BEARING WALL EXTERIOR 0 HR.  
INTERIOR 0 HR.  
NON BEARING WALL 0 HR.  
FLOOR CONSTRUCTION 0 HR.  
ROOF CONSTRUCTION 0 HR.

803.9 - INTERIOR FINISH REQUIREMENTS  
ROOMS & ENCLOSED SPACES - CLASS C  
TABLE 1004.1.1 COMPUTED OCCUPANCY  
INDUSTRIAL SPACE - 1/100 SOFT  
TOTAL = 34 PEOPLE  
1011.1 EXIT SIGNS - REQUIRED  
1016.1 EXIT ACCESS TRAVEL DISTANCE w/o SPRINKLERS - 100' MAX.

NARRATIVE:  
NETHER PROVIDENCE TOWNSHIP REQUIRES A NEW PUBLIC WORKS GARAGE. THIS GARAGE REPLACES A PIECED TOGETHER ADDITION THAT HAS DETERIORATED AND HAS FALLEN INTO DISREPAIR. THIS NEW BUILDING WILL CONTAIN EQUIPMENT RELOCATED FROM THE EXISTING AND PROVIDE AN OFFICE, ADA COMPLIANT TOILET ROOM, & MECHANICAL ROOM. AS WELL THE GARAGE WILL BE TEMPERED IN ORDER TO REMOVE ICE AND SNOW WHEN TRUCKS ARE PARKED IN THE BAYS.

GENERAL NOTE :  
• ALL PLYWOOD BLOCKING REQUIRED FOR MOUNTING EQUIPMENT THAT IS INSTALLED BY MECHANICAL, ELECTRICAL, OR PLUMBING CONTRACTORS SHALL BE INSTALLED BY THE CONTRACTOR REQUIRING THE BACK BOARD.  
• ALL WALL, CEILING, OR ROOF PENETRATIONS REQUIRED BY MECHANICAL, ELECTRICAL, OR PLUMBING CONTRACTORS SHALL BE MADE BY THE CONTRACTOR REQUIRING THE PENETRATION AND ANNULAR SPACE SHALL BE INSULATED WITH FINISH ESCUTCHEONS ON BOTH SIDES INSTALLED.  
• EACH CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING WASTE AND MAKING THEIR WORK SAFE FOR PUBLIC WORKS EMPLOYEES WHO WILL HAVE ACCESS TO THE SITE AND CONTINUE TO WORK IN THE EXISTING BUILDING.

#### FULL SET DRAWING LIST

#	SHEET NAME	ISSUED DRAWINGS
1 OF 9	SITE PLAN - BASE BID	**
2 OF 9	SITE PLAN - ADD ALTERNATE	**
3 OF 9	HIGHWAY OCCUPANCY PERMIT PLAN - ADD ALTERNATE	**
4 OF 9	EXISTING CONDITIONS PLAN	**
5 OF 9	SITE DEMOLITION PLAN : BASE BID	**
6 OF 9	GRADING PLAN	**
7 OF 9	UTILITY PLAN	**
8 OF 9	EROSION CONTROL NOTES	**
9 OF 9	DETAIL SHEET	**
EX-1.0	EXISTING FLOOR PLAN	**
A-1.0	PROPOSED FLOOR PLAN	**
A-2.0	PROPOSED EXTERIOR ELEVATIONS	**
A-3.0	PROPOSED BUILDING SECTIONS	**
S0.00	GENERAL STRUCTURAL NOTES	**
S0.01	GENERAL STRUCTURAL NOTES	**
S0.02	SPECIAL INSPECTIONS	**
S1.00	FOUNDATION PLAN	**
S1.20	ROOF FRAMING PLAN	**
S4.00	FOUNDATION & FRAMING DETAILS	**
S5.00	FRAMING DETAILS	**
S6.00	TYPICAL FOUNDATION DETAILS	**
M-1	MECHANICAL LEGEND, NOTES, & ABBR.	**
M1.1	MECHANICAL SCHEDULES & DETAILS	**
M-2	MECHANICAL FLOOR PLAN	**
M-3	MECHANICAL SEQUENCE OF OPERATION	**
M-4	MECHANICAL SPECIFICATIONS	**
M-5	MECHANICAL SPECIFICATIONS	**
E-1	ELECTRICAL LEGEND, NOTES, & ABBR.	**
E-1.1	ELECTRICAL DETAILS	**
E-2	ELECTRICAL FLOOR PLAN	**
E-3	SINGLE LINE DIAGRAM	**
E-4	SCHEDULES	**
P-1	PLUMBING COVER SHEET	**
P-1.1	PLUMBING DETAILS	**
P-2	PLUMBING FLOOR PLAN	**
P-3	PLUMBING RISER DIAGRAMS	**
P-4	PLUMBING SPECIFICATIONS	**

ARCHITECTS

LINN

140 N. PROVIDENCE ROAD  
MEDIA, PENNSYLVANIA 19063  
TEL: 610-566-7044  
FAX: 610-566-0258

EXISTING CONDITIONS & DEMOLITION

PUBLIC WORKS GARAGE

NETHER PROVIDENCE TOWNSHIP

5 BROOKHAVEN ROAD

WALLINGFORD, PA. 19086

REVISIONS

DATE:

07.25.22

SCALE:

AS NOTED

DRAWN BY:

1

CHECKED BY:

2

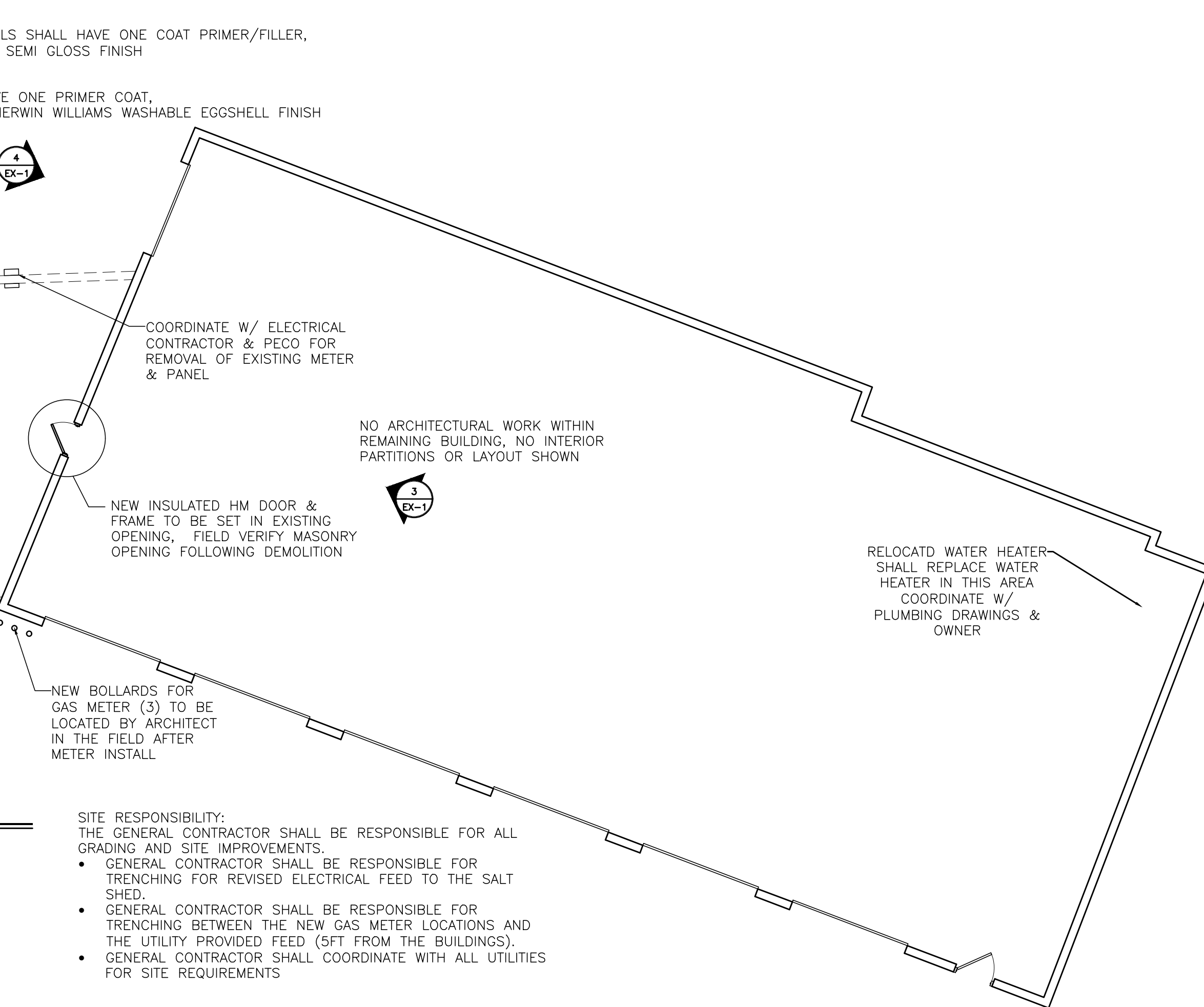
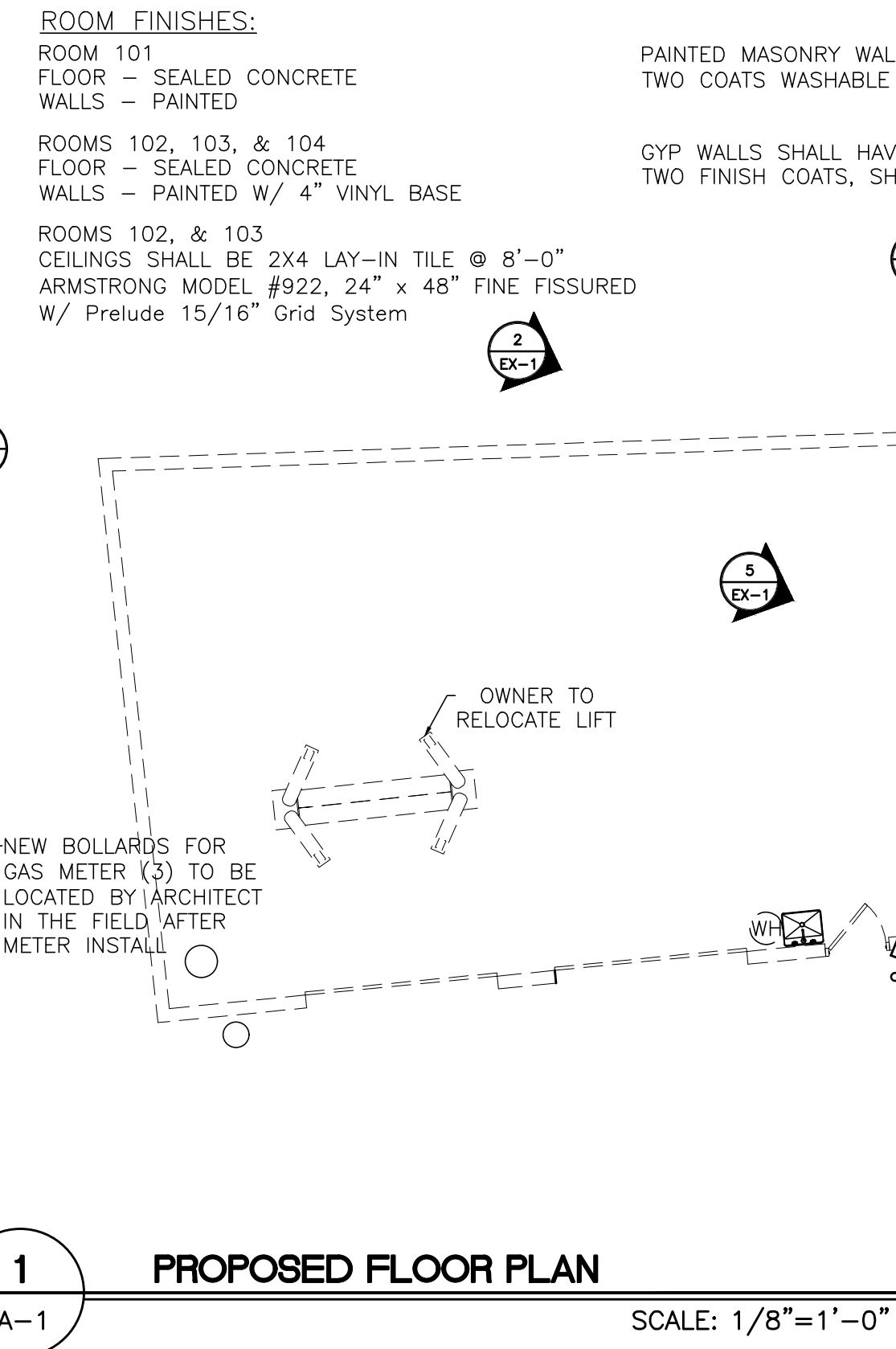
PROJ. NO.:

3

SHEET NO.

EX-1

OF SHEET



## PROPOSED FLOOR PLAN

**SITE RESPONSIBILITY:**  
THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL GRADING AND SITE IMPROVEMENTS.

- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRENCHING FOR REVISED ELECTRICAL FEED TO THE SALT SHED.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRENCHING BETWEEN THE NEW GAS METER LOCATIONS AND THE UTILITY PROVIDED FEED (5FT FROM THE BUILDINGS).
- GENERAL CONTRACTOR SHALL COORDINATE WITH ALL UTILITIES FOR SITE REQUIREMENTS

## HARDWARE MANUFACTURERS

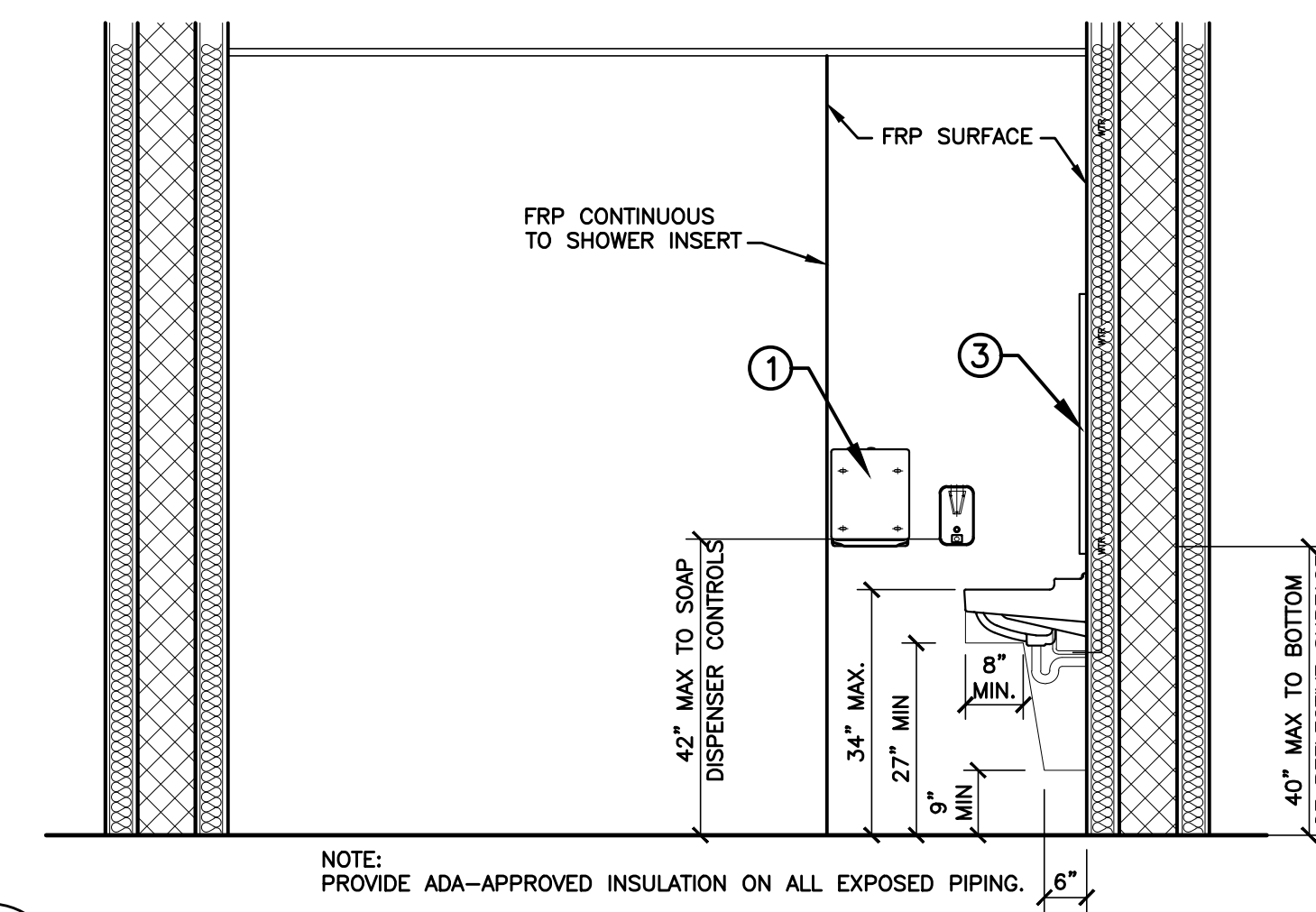
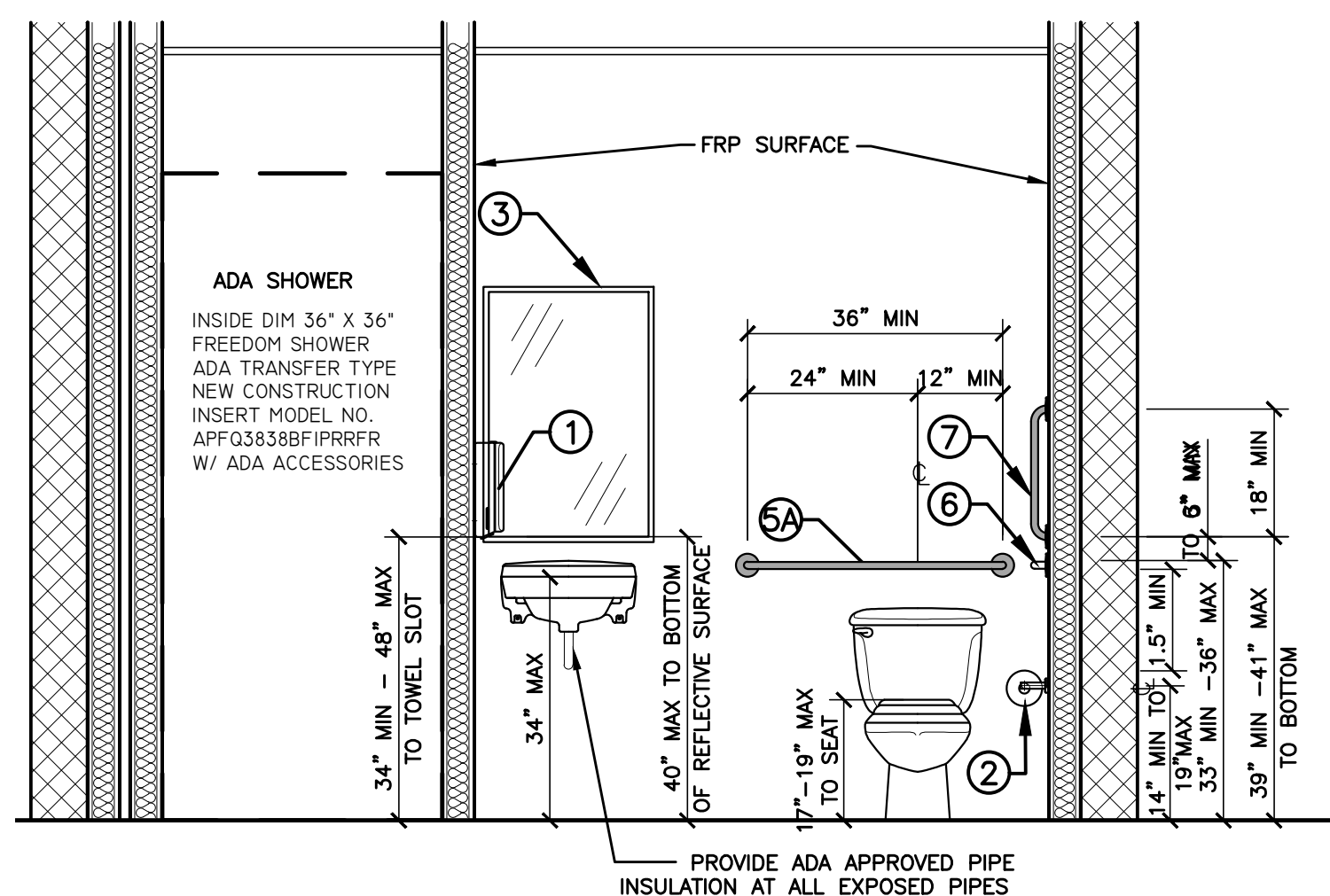
HINGES - HAGER #BB1279, 4 1/2" X 4 1/2", US26D  
LOCKS - COORDINATE W/ OWNER  
CLOSERS - LCN 4040 SERIES

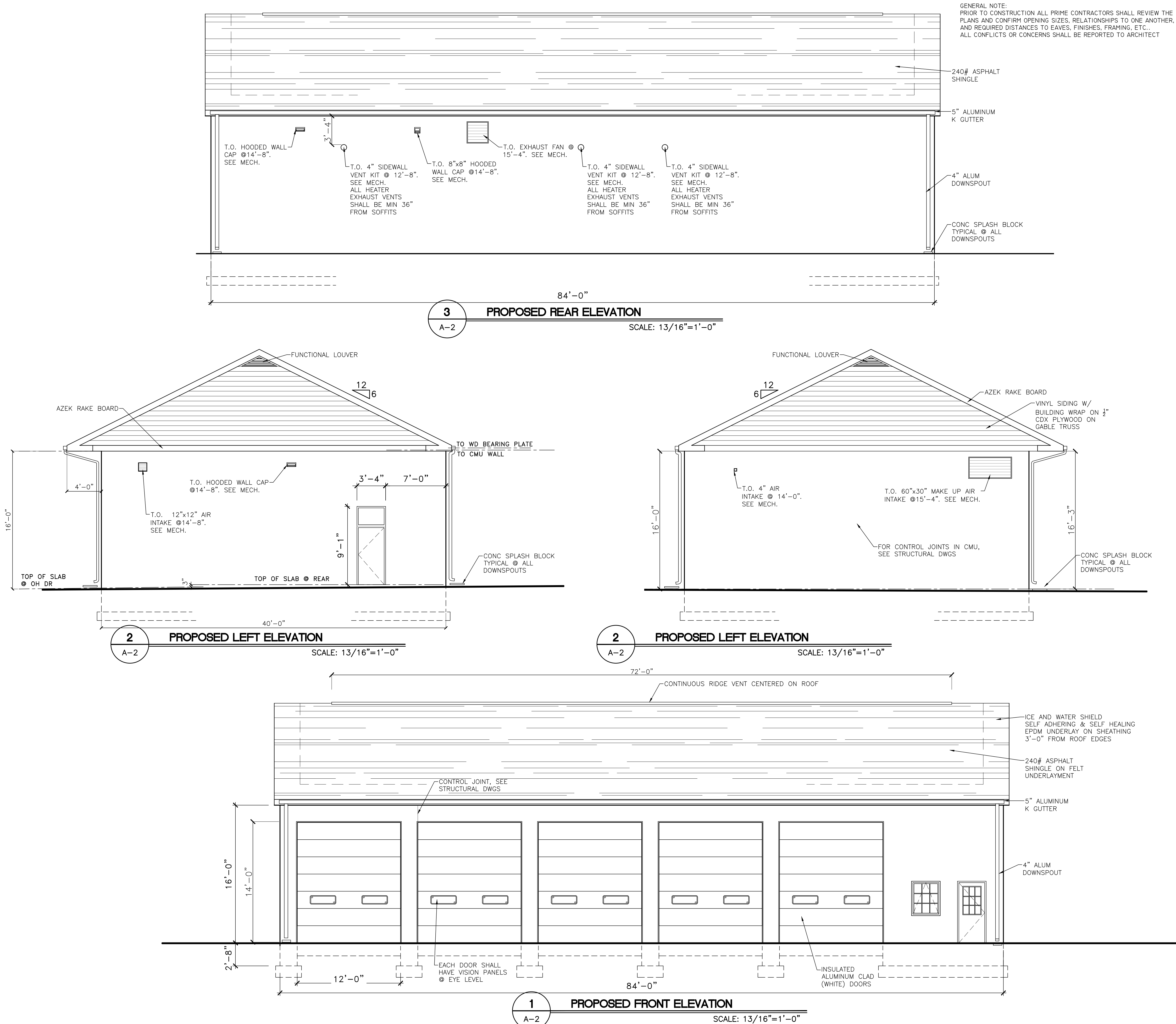
## FINISH NOTES

- 1) ALL FINISH SELECTIONS (COLORS, MATERIALS, ETC.) TO BE APPROVED BY THE ARCHITECT AND THE OWNER.
- 2) PROVIDE MOISTURE RESISTANT GYP. BOARD AT TOILET ROOM.
- 3) ALL HOLLOW METAL DOORS AND FRAMES TO BE PAINTED.
- 4) ALL INTERIOR WALLS SHALL RECEIVE (1) COAT OF PRIMER/SEALER AND (2) COATS OF PAINT.
- 5) ALL PAINT TO BE EGGSHELL FINISH UNLESS NOTED OTHERWISE.
- 6) FOLLOW ALL MANUFACTURERS INSTALLATION, CLEANING, AND FINISHING GUIDELINES FOR ALL PRODUCTS.
- 7) ALL PAINT SHALL BE BY SHERWIN WILLIAMS OR BEHR ALL FINISHES SHALL BE CLASS B MINIMUM.

## ACCESSORY SCHEDULE

\*NOTE: SEE ICC/ANSI A117.1 -2003 FOR MORE INFORMATION ON WHEN TO USE 24" REAR GRAB BAR





ARCHITECTS

LINN

ARCHITECTURE

ENGINEERING

SITE PLANNING

INTERIOR DESIGN

140 N. PROVIDENCE ROAD  
MEDIA, PENNSYLVANIA 19063  
TEL: 610-566-7044  
FAX: 610-566-3238

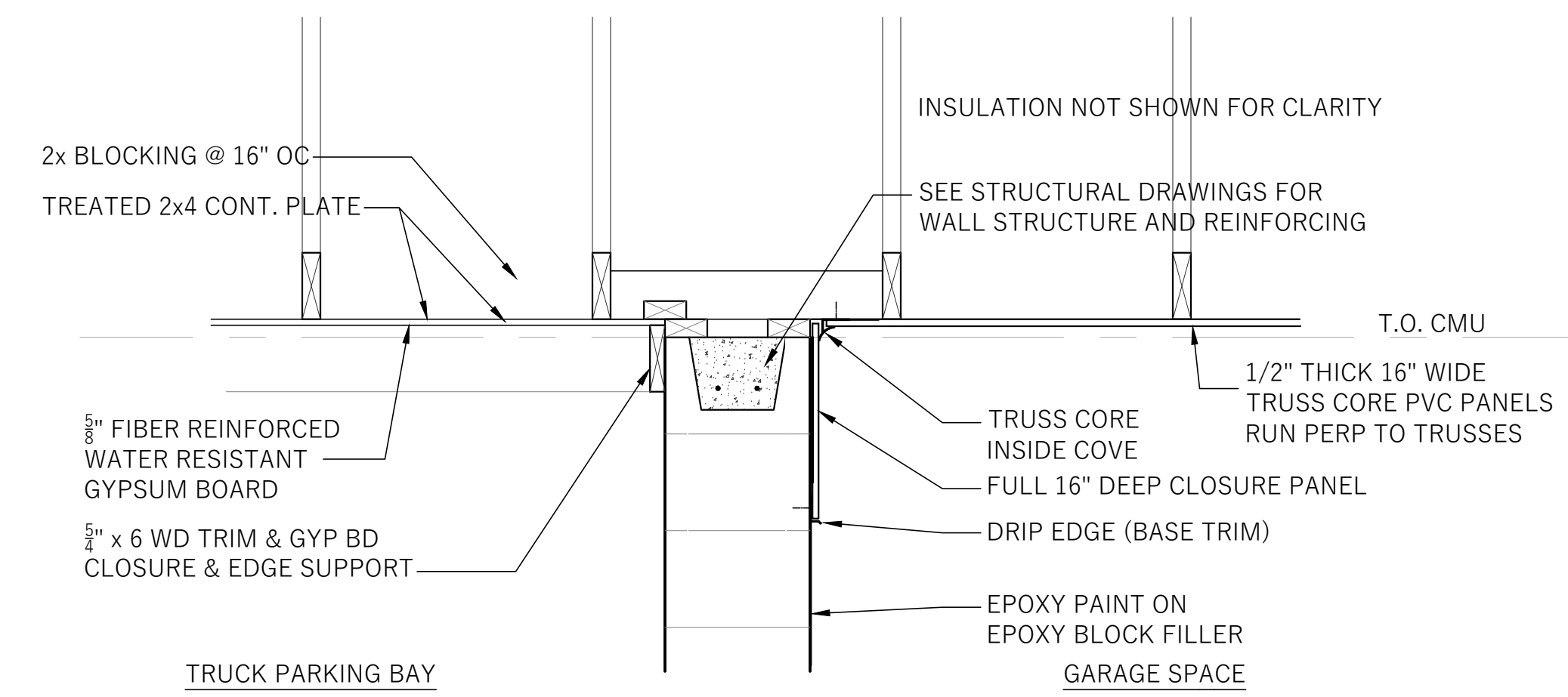
PROPOSED BUILDING ELEVATIONS

PUBLIC WORKS GARAGE

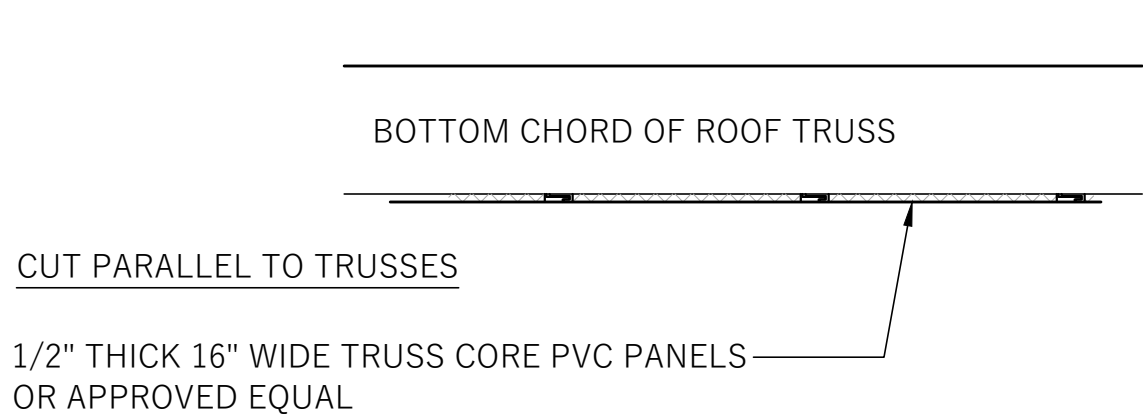
NETHER PROVIDENCE TOWNSHIP

5 BROOKHAVEN ROAD  
WALLINGFORD, PA. 19086

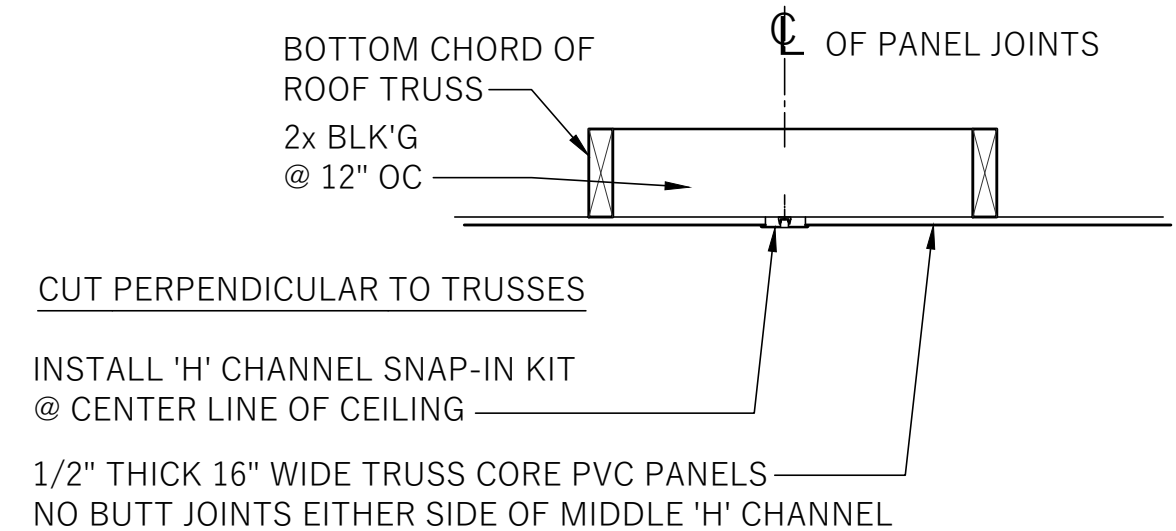
REVISIONS		DATE		
NO.	DESCRIPTION	DATE	ISSUED	PROGRESS
1	ISSUED 75% PROGRESS	7.12.2022		
2	FINAL REVIEW	10.24.22		
3	ISSUED FOR BID	03.29.23		
DATE: 07.25.22				
SCALE: AS NOTED				
DRAWN BY:				
CHECKED BY:				
PROJ. NO.:				
SHEET NO.				
A-2				
SHEET OF				



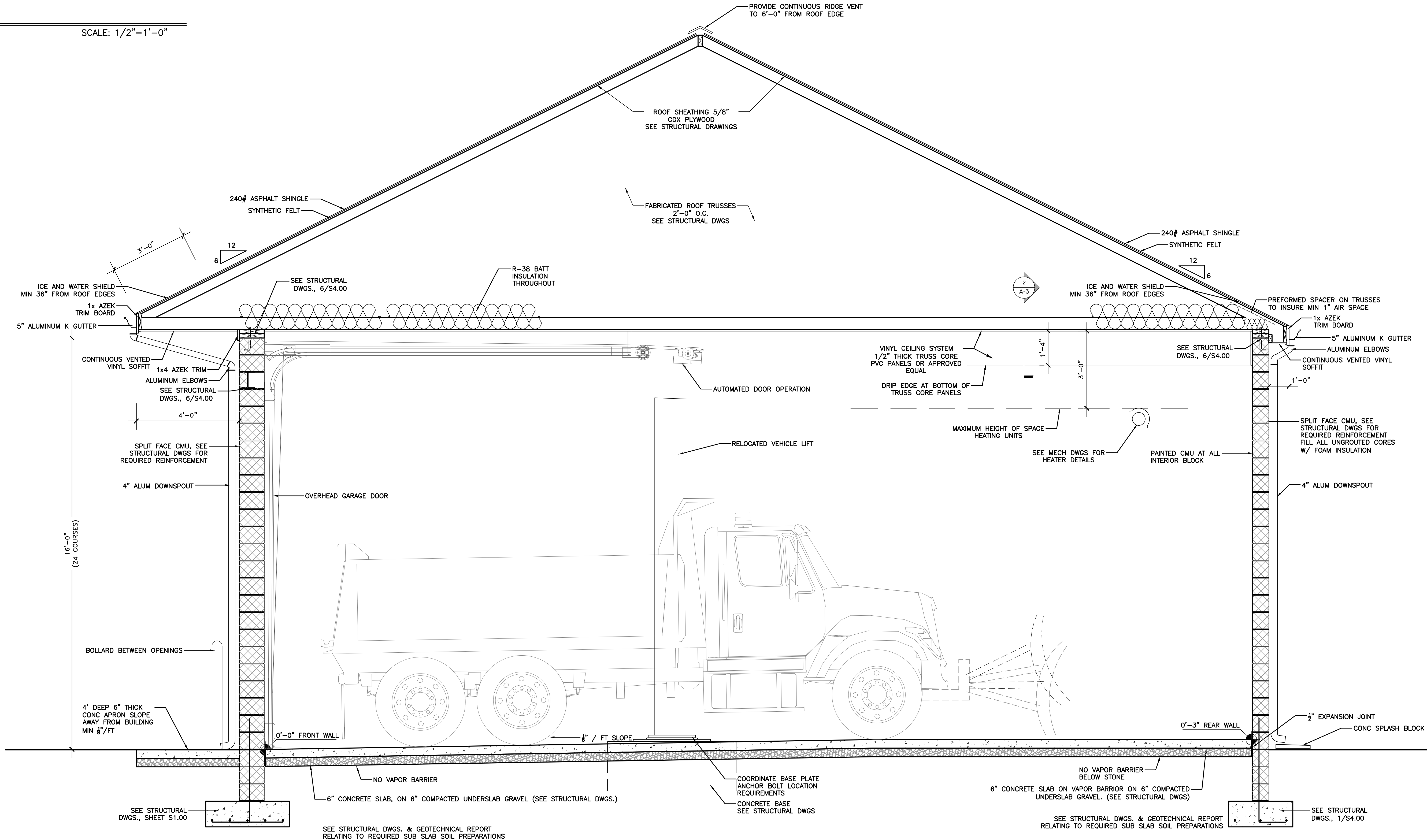
2 DETAIL  
A-3  
SCALE: 1/2"=1'-0"



3 TYPICAL CEILING DETAILS  
A-3  
SCALE: 1/2"=1'-0"



GENERAL NOTES:  
PRIOR TO CONSTRUCTION ALL PRIME CONTRACTORS SHALL REVIEW THE PLANS AND CONFIRM EQUIPMENT REQUIREMENTS SIZES, RELATIONSHIPS TO OTHER PRIME'S WORK, AND RELATIONSHIPS TO EAVES, FINISHES, FRAMING, ETC..  
ALL PRIMES ARE RESPONSIBLE FOR THEIR ASSOCIATED FINISHES AND PREPARATION: PLYWOOD BACK BOARDS, MOUNTING BRACKETS, OPENINGS IN WALLS SHALL BE THE RESPONSIBILITY OF THE PRIME THAT REQUIRES IT.  
COMPLETION OF THE INSTALLATION, INCLUDING CAULKING, REPAIR TO DAMAGED FINISHES AND STRUCTURE, SHALL BE THE RESPONSIBILITY OF THE PRIME WHO'S WORK REQUIRED THE INSTALLATION.



1 BUILDING SECTION  
A-3  
SCALE: 1/2"=1'-0"

PROPOSED BUILDING DETAILS & SECTION

PUBLIC WORKS GARAGE

NETHER PROVIDENCE TOWNSHIP

5 BROOKHAVEN ROAD  
WALLINGFORD, PA. 19086

REVISIONS	DATE	DESCRIPTION
NO. 1	7.12.2022	ISSUED 75% PROGRESS
2	10.24.22	FINAL REVIEW
3	03.29.23	ISSUED FOR BID

DATE: 07.25.22  
SCALE: AS NOTED  
DRAWN BY:  
CHECKED BY:  
PROJ. NO.:  
SHEET NO. OF

A-3

ARCHITECTS

ARCHITECTURE

ENGINEERING

SITE PLANNING

INTERIOR DESIGN

140 N. PROVIDENCE ROAD  
MEDIA, PENNSYLVANIA 19063

TEL: 610-566-7044

FAX: 610-566-3238

GENERAL NOTES

CODES & STANDARDS

- 1. INTERNATIONAL BUILDING CODE - 2018 IBC
- 2. AMERICAN SOCIETY OF CIVIL ENGINEERS - ASCE 7-16
- 3. AMERICAN CONCRETE INSTITUTE - ACI 318-14
- 4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION - AISC 360-16
- 5. AMERICAN WELDING SOCIETY - AWS D1.4/D1.4M-2011
- 6. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION - NDS 2018
- 7. INTERNATIONAL MASONRY INSTITUTE TMS 402-16, TMS 602-16ASTM STANDARDS FOR THE MATERIALS SPECIFIED

DESIGN & STRUCTURAL CRITERIA

PROJECT LOCATION/LOCAL JURISDICTION 5 BROOKHAVEN ROAD, WALLINGFORD, PA 19086  
RISK CATEGORY CATEGORY II

WIND DESIGN DATA

BASIC WIND SPEED 112 MPH  
EXPOSURE CATEGORY B  
WIND DIRECTION ALL  
INTERNAL PRESSURE COEFFICIENT +/- 0.18  
COMPONENTS & CLADDING WALL PRESSURES SEE TABLE  
COMPONENTS & CLADDING ROOF PRESSURES SEE TABLE

COMPONENTS & CLADDING WIND PRESSURE (PSF)							
	ROOF ZONES				WALL ZONES		
TRIB AREA (SF)	1, 2, & 3	1	2	3	4 & 5	4	5
10	27.7	-29.6	-27.7	-33.4	29.6	-31.5	-37.3
50	26.4	-26.9	-26.4	-30.8	27.3	-29.2	-32.5
100	25.8	-25.8	-29.6	-29.6	26.2	-28.2	-30.5
500	25.8	-25.8	-29.6	-29.6	23.9	-25.8	-25.8

SEISMIC DESIGN DATA

SEISMIC IMPORTANCE FACTORE, I<sub>s</sub> 1.0  
MAPPED SPECTRAL RESPONSE ACCELERATIONS: FOR SHORT PERIODS S<sub>s</sub>=0.181 g  
FOR 1-SECOND PERIODS S<sub>1</sub>=0.047 g  
SPECTRAL RESPONSE PARAMETERS: FOR SHORT PERIODS S<sub>DS</sub>=0.193 g  
FOR 1-SECOND PERIODS S<sub>01</sub>=0.075 g  
SEISMIC DESIGN CATEGORY B  
SITE CLASS D  
SEISMIC RESPONSE COEFFICIENT, C<sub>s</sub> 0.097  
RESPONSE MODIFICATION FACTOR, R 2.0  
DESIGN BASE SHEAR, V 20.41 KIPS  
BASIC SEISMIC-FORCE-RESISTING SYSTEM ORDINARY REINFORCED MASONRY  
SHEAR WALLS  
ANALYSIS PROCEDURE EQUIVALENT LATERAL FORCE

SNOW DESIGN DATA

GROUND SNOW LOAD, P<sub>g</sub> 25 PSF  
FLAT ROOF SNOW LOAD, P<sub>f</sub> 22.7 PSF  
MINIMUM LOW-SLOPE ROOF SNOW LOAD, P<sub>m</sub> 20 PSF  
SNOW EXPOSURE FACTOR, C<sub>e</sub> 1.0  
SNOW LOAD IMPORTANCE FACTOR, I<sub>s</sub> II  
THERMAL FACTOR, C<sub>t</sub> 1.2  
UNBALANCED SNOW SEE DETAIL 2/S1.20

GEOTECHNICAL DESIGN DATA

FROST DEPTH 36 IN  
ALLOWABLE SOIL BEARING PRESSURE 1500 PSF (ASSUMED)  
SOIL COEFFICIENT OF FRICTION 0.35 (ASSUMED)  
ACTIVE EARTH PRESSURE 30 PSF/FT (ASSUMED)  
AT-REST EARTH PRESSURE 60 PSF/FT (ASSUMED)  
PASSIVE EARTH PRESSURE 250 PSF/FT (ASSUMED)

DEFLECTION DESIGN CRITERIA

ROOF TOTAL LOAD L/240  
ROOF LIVE LOAD L/360  
LATERAL SYSTEMS L/180

GRAVITY DESIGN LOADS

LEVEL	DEAD	ADL	LIVE	TOTAL
ROOF	15 PSF	5 PSF (SOLAR PANELS)	22.7 PSF	43 PSF

NOTES:

- 1. STRUCTURAL DESIGN IS BASED ON THE CODE CRITERIA/DESIGN GUIDELINE VALUES ABOVE THAT PRODUCE THE GREATEST LOADING CONDITION.
- 2. GRAVITY DESIGN DEAD LOAD DOES NOT INCLUDE WOOD TRUSS SELF WEIGHT.
- 3. GRAVITY DESIGN LOADS PROVIDED ARE SERVICE LEVEL LOADS.
- 4. ADL: ADDITIONAL 5 PSF OF DEAD LOAD APPLIED TO SOUTH SIDE OF ROOF FOR SOLAR PANELS

MISCELLANEOUS

- 1. REFERENCE CIVIL DRAWINGS FOR EQUIPMENT LOCATION AND ORIENTATION ON THE SITE. THE CONTRACTOR AND SUB-TRADES SHALL FURNISH ALL REQUIRED MATERIAL, LABOR, EQUIPMENT AND PERFORM ALL WORK AS NECESSARY, AS INDICATED ON THE PROJECT DOCUMENTS, OR AS REASONABLY INFERRED TO EXECUTE THE SCOPE OF WORK FOR A PROPERLY FINISHED, COMPLETE JOB.
- 2. THE QUALITY OF WORKMANSHIP SHOULD BE SET AND SUPERVISED BY THE CONTRACTOR TO PASS BUILDING DEPT. OR ENGINEER INSPECTION FOR ROUGH CONSTRUCTION. THE LEVEL OF QUALITY AND TOLERANCE SHOULD BE APPROPRIATE FOR THE INSTALLED ELEMENT TO RECEIVE THE NEXT IN-LINE FINISH ASPECT OF CONSTRUCTION.
- 3. THE PURPOSE OF PROJECT DRAWINGS IS TO DEPICT THE OVERALL SCOPE OF THE PROJECT. THE PROJECT DRAWINGS HAVE BEEN DEVELOPED TO SHOW A LEVEL OF DETAIL WITH THE OBJECTIVE OF PLAN CHECK APPROVAL AND ISSUANCE OF A BUILDING PERMIT. THIS MODERATE LEVEL OF DETAIL SHOULD ALLOW FOR A VARIETY OF STANDARD CONSTRUCTION METHODS AND SEQUENCES. THE PROJECT DRAWINGS ARE INTENDED TO COMPLY WITH THE ORDINANCES, RULES AND REGULATIONS OF THE JURISDICTION IN WHICH THE BUILDING IS LOCATED.
- 4. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNOLOGIES, SEQUENCES AND PROCEDURES.

GENERAL NOTES - cont'd

- 5. CONSTRUCTION MATERIAL SHALL BE SPREAD OUT IF PLACED ON FRAMED FLOORS OR ROOF. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT.
- 6. WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDUM.
- 7. OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. THEY SHALL BE RESPONSIBLE FOR ALL CHANGES NECESSARY IF THEY CHOOSE AN OPTION AND THEY SHALL COORDINATE ALL DETAILS.
- 8. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT.
- 9. TYPICAL DETAILS ARE NOT CUT ON DRAWINGS, BUT APPLY UNLESS NOTED OTHERWISE.
- 10. IN THE CASE OF DISCREPANCIES BETWEEN THE GENERAL NOTES, SPECIFICATIONS, PLANS/DETAILS OR REFERENCE STANDARDS, THE ARCHITECT/ENGINEER SHALL DETERMINE WHICH SHALL GOVERN. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK. SHOULD ANY DISCREPANCY BE FOUND IN THE CONTRACT DOCUMENTS, THE CONTRACTOR WILL BE DEEMED TO HAVE INCLUDED IN THE PRICE THE MOST EXPENSIVE WAY OF COMPLETING THE WORK, UNLESS PRIOR TO THE SUBMISSION OF THE PRICE, THE CONTRACTOR ASKS FOR A DECISION FROM THE ARCHITECT AS TO WHICH SHALL GOVERN. ACCORDINGLY, ANY CONFLICT IN OR BETWEEN THE CONTRACT DOCUMENTS SHALL NOT BE A BASIS FOR ADJUSTMENT IN THE CONTRACT PRICE.
- 11. VISITS TO THE JOBSITE BY THE ENGINEER TO OBSERVE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT THEY ARE THE GUARANTORS OF THE CONTRACTOR'S WORK, NOR SUPERVISION, NOR SAFETY AT THE JOBSITE.
- 12. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK THAT CONFORMS TO THE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) SAFETY AND HEALTH STANDARDS FOR THE CONSTRUCTION INDUSTRY.
- 13. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION. DO NOT PENETRATE ANY STRUCTURAL ELEMENTS (BEAMS, COLUMNS, WALLS, SLABS, STEEL DECKS, ETC.) WITHOUT PRIOR WRITTEN APPROVAL OF STRUCTURAL ENGINEER THROUGH ARCHITECT.
- 14. ANY ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE SEAL OF A CIVIL OR STRUCTURAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED.
- 15. CONTRACTOR SHALL COORDINATE ALL DIMENSIONS AND ELEVATIONS SHOWN ON STRUCTURAL DRAWINGS WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS. NOTED SCALES ARE INTENDED FOR FULL SIZE PLANS. DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS ONLY.
- 16. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY SUPPORTS REQUIRED FOR STABILITY AND FOR RESISTANCE TO WIND AND SEISMIC FORCES UNTIL STRUCTURE IS CAPABLE OF PROVIDING THIS SUPPORT.CONTRACTOR TO REFER TO AISC STEEL DESIGN GUIDE #10 "ERECTION BRACING OF LOW RISE STRUCTURAL STEEL BUILDINGS" AND TO THE NATIONAL CONCRETE MASONRY ASSOCIATION TECHNICAL GUIDE #3-4 "BRACING CONCRETE MASONRY WALLS DURING CONSTRUCTION".
- 17. UNLESS OTHERWISE INDICATED, ALL ITEMS NOTED TO BE DEMOLISHED SHALL BECOME THE CONTRACTOR'S PROPERTY AND BE REMOVED FROM THE SITE.
- 18. CONTRACTORS SHALL VISIT THE SITE PRIOR TO BID TO ASCERTAIN CONDITIONS WHICH MAY ADVERSELY AFFECT THE WORK OR COST THEREOF.

MATERIALS

STRUCTURAL STEEL	W CHANNEL & ANGLE PLATES	ASTM A992, Fy = 50 KSI ASTM A36, Fy = 36 KSI ASTM A36, Fy = 36 KSI
REINFORCING BARS		ASTM A615, GRADE 60 (NON-WELDABLE) ASTM A706, GRADE 60 (WELDABLE) ASTM A-1064 (WELDED WIRE REINF)
ANCHOR RODS		ASTM F1554, GRADE 36
HIGH STRENGTH BOLTS		ASTM A325N
BOLTS		ASTM A307, GALVANIZED PER ASTM A153 (ONLY WHERE NOTED ON PLANS)
HEADED STUD ANCHORS		ASTM A108
WELD METAL		E70XX ELECTRODE
ADHESIVE ANCHORS	MASONRY	HILTI HIT HY 270 OR SIMPSON STRONG-TIE SET ANCHORING ADHESIVE HILTI HIT RE 500v3 ASTM A36 ALL-THREAD WITH CHISEL POINT
WOOD	CONCRETE ALL	2x4 STUDS, H.F. STUD 2x4 STUDS AND LARGER, H.F. #2 WALL SHEATHING, 24/16 OSB, EXPOSURE 1 ROOF SHEATHING, 48/24 CDX PLYWOOD
MASONRY		CMU BLOCK: NORMAL WEIGHT, F'c = 1900 PSI MORTAR: PORTLAND CEMENT/LIME, TYPE M OR S GROUT: F'c = 2000 PSI (28 DAYS) WALL COMPRESSIVE STRENGTH = F'M = 2000 PSI (28 DAYS)

CONCRETE

- 1. CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301, "STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE" AND ACI 318, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE". ALL REINFORCING SHALL CONFORM TO THE CRSI SPECIFICATIONS & HANDBOOK. CONCRETE PLACEMENT SHALL MEET ALL COLD WEATHER AND HOT WEATHER REQUIREMENTS OUTLINED IN ACI 306 & 305 RESPECTIVELY.
- 2. ADDITION OF WATER TO THE BATCH FOR MATERIAL WITH INSUFFICIENT SLUMP WILL NOT BE PERMITTED, UNLESS THE SUPPLIER HAS SPECIFICALLY WITHHELD WATER FROM THE BATCH AT THE PLANT. IN SUCH CASE THE MIX DESIGN AND TRUCK TICKET MUST CLEARLY STATE THE MAXIMUM AMOUNT OF WATER THAT CAN BE ADDED TO THE BATCH ON SITE. IN NO CASE SHALL THE DESIGN WATER TO CEMENTITIOUS MATERIAL RATIO BE EXCEEDED.
- 3. CONCRETE CONTAINING SUPERPLASTICIZING ADMIXTURE SHALL HAVE A SLUMP OF 4" +/- 1", TO BE FIELD VERIFIED, PRIOR TO ADDING ADMIXTURE, AND NOT EXCEEDING 8" AT PLACEMENT.
- 4. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED, INCLUDING SLABS ON GRADE AT 2'-0" O.C. AROUND UNDER-FLOOR DUCTS AND SLAB EDGES, REINFORCING, KEYS, ETC.
- 5. REINFORCING SHALL BE CONTINUOUS AROUND ALL CORNERS AND THROUGH CONSTRUCTION JOINTS UNLESS SHOWN OTHERWISE.
- 6. REINFORCING STEEL SHALL NOT BE BENT OR STRAIGHTENED IN A MANNER INJURIOUS TO THE CONCRETE OR STEEL.
- 7. ALL CONDUITS, GROUND WIRES, DRAINS, ANCHOR BOLTS, OTHER EMBEDDED ITEMS, ETC. SHALL BE IN PLACE BEFORE CONCRETE PLACEMENT.
- 8. REINFORCING LAP SPLICES IN CONCRETE SHALL BE PER TYPICAL DETAIL UNLESS NOTED OTHERWISE. ALL SPLICE LOCATIONS ARE SUBJECT TO APPROVAL. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT CORNERS AND INTERSECTIONS OF FOOTINGS AND WALLS.
- 9. ALL FIELD BENDING OF REINFORCING SHALL BE STANDARD 90 DEGREE HOOKS AS DEFINED IN CURRENT ACI 318 UNLESS NOTED OR DETAILED OTHERWISE.
- 10. WHEN TOTAL NUMBER OF REINFORCING BARS IS SHOWN ON DESIGN DRAWINGS AND SPACING IS NOT SPECIFIED, BARS SHALL BE EQUALLY SPACED.
- 11. DETAILS OF REINFORCING NOT SHOWN IN THESE PLANS SHALL BE DONE IN ACCORDANCE WITH ACI 315 AND ACI 318.
- 12. ALL REINFORCING STEEL SHALL BE SET AND TIED IN PLACE PRIOR TO POURING OF CONCRETE, EXCEPT THAT VERTICAL DOWELS FOR MASONRY WALL REINFORCING MAY BE "FLOATED" IN PLACE. DO NOT FIELD BEND BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE UNLESS SPECIFICALLY INDICATED OR APPROVED BY THE ENGINEER.
- 13. BAR SUPPORTS AND HOLDING BARS SHALL BE PROVIDED FOR ALL REINFORCING STEEL TO INSURE MINIMUM CONCRETE COVER. BAR SUPPORTS SHALL BE PLASTIC TIPPED OR STAINLESS STEEL.
- 14. ALL SLABS-ON-GRADE SHALL HAVE CONTROL JOINTS CUT IN CONCRETE WITHIN 8 HOURS OF PLACEMENT AT A SPACING NO GREATER THAN 12" O.C.E.W. (U.N.O. ON PLANS).
- 15. FORMWORK SHALL REMAIN IN PLACE UNTIL CONCRETE HAS OBTAINED AT LEAST 90% OF ITS 28 DAY COMPRESSIVE STRENGTH.
- 16. ALL EDGES OF PERMANENTLY EXPOSED CONCRETE SURFACES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.
- 17. CONCRETE PROPERTIES (SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS):

CONCRETE MATERIAL SCHEDULE					
USAGE	UNIT WEIGHT	F'c (PSI)	MAX W/C	AIR CONTENT	EXPOSURE CLASS
FOUNDATION CONCRETE	145 PCF	4500	0.45	6%	F2
EXTERIOR SITE WORK	145 PCF	4500	0.45	6%	F2
INTERIOR SLAB ON GRADE	145 PCF	4000	0.50	3%	F0

- NOTES:
- 1. FOUNDATION CONCRETE INCLUDES FOOTINGS, WALLS & PIERS
  - 2. TOLERANCE FOR UNIT WEIGHT IS ±3 PCF
  - 3. TOLERANCE FOR AIR CONTENT IS ±1.5% (ASTM C567) WHERE A RANGE IS NOT PROVIDED

ANCHOR ROD NOTES

- 1. ANCHOR ROD LOCATIONS AND DIAMETERS ARE PER BUILDING MANUFACTURER.
- 2. ALL ANCHOR RODS SHALL BE EITHER HEADED OR DOUBLE NUT WITH 1/4"x2"x2" STEEL WASHER.
- 3. MINIMUM EMBEDMENT:
  - 3.1. 5/8"Ø RODS = 6"
  - 3.2. 1" Ø RODS = 22"
- 4. ANCHOR RODS SHALL BE ASTM F1554 GR 36 MATERIAL.
- 5. ANCHOR NUTS SHALL BE INSTALLED SNUG TIGHT.
- 6. EPOXY AND EXPANSION ANCHORS SHALL BE HILTI (OR EQUAL) INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.

LEGEND AND ABBREVIATIONS

AB	ANCHOR BOLT	HORIZ	HORIZONTAL
ACI	AMERICAN CONCRETE INSTITUTE	HSA	HEADED STUD ANCHOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	HSS	HOLLOW STRUCT STEEL
		IBC	INTERNATIONAL BUILDING CODE
ALT	ALTERNATE	INT	INTERIOR
APPROX	APPROXIMATE	L	STEEL ANGLE
ARCH	ARCHITECTURAL	LG	LIGHT GAUGE
ASTM	AMERICAN SOCIETY FOR TESTING MATERIAL	LLV	LONG LEG VERTICAL
		LONG	LONGITUDINAL
AWS	AMERICAN WELDING SOCIETY	MAX	MAXIMUM
@	AT	MCJ	MASONRY CONTROL JOINT
BLDG	BUILDING	MECH	MECHANICAL
BLK'G	BLOCKING	MANUF OR MFR	MANUFACTURER
BM	BEAM	MIN	MINIMUM
BOC	BOTTOM OF CONCRETE	MISC	MISCELLANEOUS
BOF	BOTTOM OF FOOTING	NO. OR #	NUMBER
BOS	BOTTOM OF STEEL/SLAB	(N)	NEW
BOT	BOTTOM OF	NTS	NOT TO SCALE
BRG	BEARING	OC	ON CENTER
BTB	BACK TO BACK	OCF	ON CENTER EACH FACE
BTWN	BETWEEN	OCEW	ON CENTER EACH WAY
C	STEEL CHANNEL	OPP	OPPOSITE
CFS	COLD FORMED STEEL	OWJ	OPEN WEB JOIST
CIP	CAST IN PLACE	PEMB	PRE-ENGINEERED METAL BUILDING
CJ	CONTROL JOINT	PLCS	PLACES
CL OR CL	CENTER LINE	PL	PLATE
CLR	CLEAR	PREFAB	PREFABRICATED
CMU	CONCRETE MASONRY UNIT	PSF	POUNDS PER SQUARE FOOT
		PT	PRESSURE TREATED
COL	COLUMN	REF	REFERENCE
CONC	CONCRETE	REINF	REINFORCEMENT
CONN	CONNECTION	REQ'D	REQUIRED
CONT	CONTINUOUS	REV	REVISION/REVISED
DEMO	DEMOLISH	SCH OR SCHED	SCHEDULE
DET	DETAIL	SFE	SUBFLOOR ELEVATION
DF	DOUGLAS FIR	SHT	SHEET
Ø OR DIA	DIAMETER	SIM	SIMILAR
DIM	DIMENSION	SOG	SLAB-ON-GRADE
DJ	DOUBLE JOIST	SPCS OR SPA	SPACE(S)
DWG	DRAWING	SPEC	SPECIFICATION(S)
EA	EACH	SQ	SQUARE
EA WAY OR EW	EACH WAY	STD	STANDARD
EF	EACH FACE	STRUCT	STRUCTURAL
EJ	EXPANSION JOINT	SYM	SYMMETRICAL
EL OR ELEV	ELEVATION	T&B	TOP & BOTTOM
EMBED	EMBEDMENT	THRU	THROUGH
ENG	ENGINEER	TOC	TOP OF CONCRETE
EOR	ENGINEER OF RECORD	TOF	TOP OF BEAM
EQ	EQUAL	TOS	TOP OF CONCRETE
EXIST OR (E)	EXISTING	TOF	TOP OF FOOTING
EXP	EXPANSION	TOS	TOP OF STEEL/SLAB
EXT	EXTERIOR	TOW	TOP OF WALL
FDT OR FND	FOUNDATION	TRANS	TRANSVERSE
FF	TYPICAL FLOOR	TYP	TYPICAL
FLR	FLOOR	VIF	VERIFY IN FIELD
FTG	FOOTING	VERT	VERTICAL
GA	GAUGE	UNO	UNLESS NOTED OTHERWISE
GALV	GALVANIZED	W/	WITH
GEN	GENERAL	WF	WIDE FLANGE
GLB	GLULAM BEAM	WP	WORKING POINT
GR	GRADE	WT	WEIGHT

CONCRETE

CONCRETE MASONRY UNIT

STEEL IN SECTION

SECTION OR DETAIL DESIGNATION SYMBOL

1  
S1.0

SHEET NUMBER WHERE SECTION OR DETAIL IS SHOWN

UP OR DOWN

XXXX

BPX

ELEVATION NOTED

FLAG NOTE

REVISION SPECIFIED

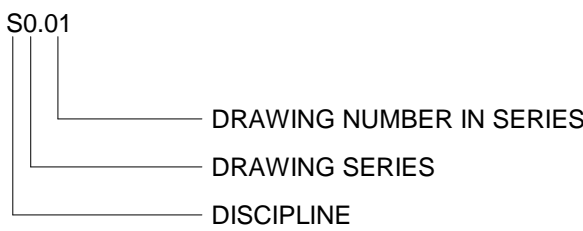
STAIR IDENTIFICATION

INDICATES COLUMN

INDICATES BASE PLATE, SEE SCHEDULE Sx.x

DRAWING SCHEDULE

DRAWING NUMBER NOMENCLATURE



DRAWING NUMBER	DRAWING NAME	ISSUE DATE	75% PROGRESS	PROGRESS CHECK - NOT FOR DISTRIBUTION	ISSUE FOR BID				
S0.00	GENERAL STRUCTURAL NOTES	09/09/22	X	X					
S0.01	GENERAL STRUCTURAL NOTES	12/13/22	X	X					
S0.02	SPECIAL INSPECTIONS	03/29/23	X	X					
S1.00	FOUNDATION PLAN		X	X					
S1.20	ROOF FRAMING PLAN		X	X					
S4.00	FOUNDATION DETAILS		X	X					
S5.00	FRAMING DETAILS								
S6.00	TYPICAL FOUNDATION DETAILS		X	X					

NOT FOR CONSTRUCTION, FOR REVIEW

03/29/23

12/13/22

08/09/22

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NETHER PROVIDENCE PUBLIC WORKS GARAGE

BROOKHAVEN ROAD, WALLINGFORD, PA 19086

GENERAL STRUCTURAL NOTES

SHEET

S0.00



1. SPECIAL INSPECTION AND TESTING SHALL BE PROVIDED BY THE OWNER IN ACCORDANCE WITH CHAPTER 17 OF THE 2018 IBC.
2. ALL SPECIAL INSPECTORS SHALL BE UNDER THE SUPERVISION OF A REGISTERED CIVIL OR STRUCTURAL ENGINEER LICENSED IN THE STATE IN WHICH THE WORK IS TO BE PERFORMED. ALL INSPECTIONS SHALL BE PERFORMED BY EXPERIENCED PERSONNEL MEETING THE REQUIREMENTS OF THE IBC AND AC291 "ACCREDITATION CRITERIA FOR SPECIAL INSPECTION AGENCIES" AND SHALL BE APPROVED BY THE LICENSED ENGINEER OF RECORD.
3. SPECIAL INSPECTIONS ARE NOT REQUIRED FOR WORK OF A MINOR NATURE AS APPROVED BY THE BUILDING OFFICIAL, NOR ARE THEY REQUIRED FOR GROUP U OCCUPANCIES.
4. EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND OR SEISMIC FORCE RESISTING SYSTEM SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK AS REQUIRED IN 1704.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE SPECIAL INSPECTOR OR SPECIAL INSPECTION AGENCY AT LEAST TWO WORKING DAYS PRIOR TO PERFORMING ANY WORK THAT REQUIRES SPECIAL INSPECTION. ALL WORK PERFORMED WITHOUT THE REQUIRED SPECIAL INSPECTION IS SUBJECT TO REMOVAL.
6. SPECIAL INSPECTIONS SHALL BE REQUIRED FOR PROPOSED WORK THAT IS, IN THE OPINION OF THE BUILDING OFFICIAL, UNUSUAL IN ITS NATURE, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING EXAMPLES: CONSTRUCTION MATERIALS AND SYSTEMS THAT ARE ALTERNATIVES TO MATERIALS AND SYSTEMS SPECIFIED BY THE DESIGN PROFESSIONAL OR MATERIALS NOT PERMITTED BY THE BUILDING OFFICIAL, MATERIALS AND SYSTEMS NOT PERMITTED BY THE BUILDING OFFICIAL, MATERIALS AND SYSTEMS REQUIRED TO BE INSTALLED IN ACCORDANCE WITH ADDITIONAL MANUFACTURER'S INSTRUCTIONS THAT PRESCRIBE REQUIREMENTS NOT CONTAINED IN THE IBC OR IN STANDARDS REFERENCED BY THE IBC.

1. MASONRY CONSTRUCTION SHALL BE INSPECTED AND VERIFIED IN ACCORDANCE WITH TMS 402/ASCE 5 AND TMS 602/ASCE 6 QUALITY ASSURANCE PROGRAM REQUIREMENTS.

1. SPECIAL INSPECTIONS OF THE STEEL FABRICATION PROCESS SHALL NOT BE REQUIRED WHERE THE FABRICATOR DOES NOT PERFORM ANY WELDING, THERMAL CUTTING OR HEATING OPERATION OF ANY KIND AS PART OF THE FABRICATION PROCESS. IN SUCH CASES, THE FABRICATOR SHALL BE REQUIRED TO SUBMIT A DETAILED PROCEDURE FOR MATERIAL CONTROL THAT DEMONSTRATES THE FABRICATOR'S ABILITY TO MAINTAIN SUITABLE RECORDS AND PROCEDURES SUCH THAT, AT ANY TIME DURING THE FABRICATION PROCESS, THE MATERIAL SPECIFICATION, AND GRADE FOR THE MAIN STRESS-CARRYING ELEMENTS ARE CAPABLE OF BEING DETERMINED. MILL TEST REPORTS SHALL BE IDENTIFIABLE TO THE MAIN STRESS-CARRYING ELEMENTS WHEN REQUIRED BY THE APPROVED CONSTRUCTION DOCUMENTS.
2. STRUCTURAL STEEL - SPECIAL INSPECTION FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360.
3. SPECIAL CONSTRUCTION INSPECTION FOR STRUCTURAL STEEL - SPECIAL INSPECTION FOR STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE TABLE SHOWN.
4. COLD-FORMED STEEL - WELDING INSPECTION AND WELDING INSPECTOR QUALIFICATIONS FOR COLD-FORMED STEEL FLOOR AND ROOF DECKS SHALL BE IN ACCORDANCE WITH AWS D1.3.
5. REINFORCING STEEL - WELDING INSPECTION AND WELDING INSPECTOR QUALIFICATIONS FOR REINFORCING STEEL SHALL BE IN ACCORDANCE WITH AWS D1.4 AND ACI 318.
6. COLD-FORMED STEEL TRUSS - FOR MAIN SPAN OF 60 FEET OR GREATER, COLD-FORMED STEEL TRUSS CLEAR SPAN IS 60 FEET OR GREATER, THE SPECIAL INSPECTOR SHALL VERIFY THAT THE TEMPORARY INSTALLATION RESTRAINT/BRACING AND THE PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT/BRACING ARE INSTALLED IN ACCORDANCE WITH THE APPROVED TRUSS SUBMITTAL PACKAGE.

SPECIAL INSPECTIONS FOR STEEL				
APPLIES	INSPECTION TASK	FREQUENCY		
		CONT	PERIODIC	
	1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS:			
X	a. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARD SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS			X
X	b. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED INSPECTION OF ADHESIVE ANCHORS			
X	2. INSPECTION OF ADHESIVE ANCHORS			X
	3. INSPECTION OF HIGH-STRENGTH BOLTING (REF AISC 360, SEC. M2.5):			
	a. SNUG-TIGHT JOINTS			X
	b. PRETENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OFF-NUT WITH MATCHMARKING, TWIST-OFF BOLT, OR DIRECT TENSION INDICATOR.			X
	c. PRETENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OFF-NUT WITHOUT MATCHMARKING OR CALIBRATED WRENCH	X		
	4. MATERIAL VERIFICATION OF STRUCTURAL STEEL:			
X	a. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360.			X
X	b. MANUFACTURER'S CERTIFIED MILL TEST REPORTS			X
	5. MATERIAL VERIFICATION OF WELD FILLER MATERIAL:			
X	a. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS			X
X	b. MANUFACTURER'S CERTIFICATION OF COMPLIANCE REQUIRED			X
	6. INSPECTION OF WELDING:			
	a. STRUCTURAL STEEL			
	1) COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS		X	
	2) MULTI-PASS FILLET WELDS		X	
	3) SINGLE PASS FILLET WELDS > 5/16"		X	
	4) PLUG AND SLOT WELDS		X	
X	5) SINGLE PASS FILLET WELDS < 5/16"			X
	7. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS:			
	a. DETAILS SUCH AS BRACING AND STIFFENING			
	b. MEMBER LOCATIONS			
X	c. APPLICATION OF JOINT DETAILS AT EACH CONNECTION			

APPLIES	TYPE	CONT	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
X	1. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT	-	X	ACI 318: CH, 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
	2. REINFORCING BAR WELDING: a. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706; b. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"; AND c. INSPECT ALL OTHER WELDS.	-	X	AWS D1.4 ACI 318: 26.6.4	-
		X			
	3. INSPECT ANCHORS CAST IN CONCRETE.	-	X	ACI 318: 17.8.2	-
X	4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS. a. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. b. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.a.	X		ACI 318: 17.8.2.4	-
			X	ACI 318: 17.8.2	
X	5. VERIFY USE OF REQUIRED DESIGN MIX.	-	X	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
X	6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	-	ASTM C172 ASTM C31 ACI 318: 26.5, 26.12	1908.10
	7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-	ACI 318: 26.5	1908.6, 1908.7, 1908.8
	8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X	ACI 318: 26.5.3-26.5.5	1908.9
	9. INSPECT PRESTRESSED CONCRETE FOR: a. APPLICATION OF PRESTRESSING FORCES; AND b. GROUTING OF BONDED PRESTRESSING TENDONS.	X X	-	ACI 318: 26.10	-
	10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	-	X	ACI 318: 26.9	-
	11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X	ACI 318: 26.11.2	-
	12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	-	X	ACI 318: 26.11.2(b)	-

SPECIAL INSPECTIONS FOR MASONRY						
MINIMUM SPECIAL INSPECTION REQUIREMENTS						
APPLIES	INSPECTION TASK	FREQUENCY (a)			REFERENCE FOR CRITERIA	
		LEVEL 1	LEVEL 2	LEVEL 3	TMS 402	TMS 602
	1. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:					
X	a. PROPORTIONS OF SITE-PREPARED MORTAR		P			Art. 2.1, 2.6 A, & 2.6 C
	b. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES		P			Art. 2.4 B & 2.4 H
X	c. GRADE, TYPE AND SIZE OF REINFORCEMENT, CONNECTORS, ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES		P			Art. 3.4 & 3.6 A
	d. PRESTRESSING TECHNIQUE		P			Art. 3.6 B
	e. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY		C <sup>(b)</sup> /P <sup>(c)</sup>			Art. 2.1 C.1
	f. SAMPLE PANEL CONSTRUCTION		P			Art. 1.6 D
	2. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:					
X	a. GROUT SPACE		P			Art. 3.2 D & 3.2 F
	b. PLACEMENT OF PRESTRESSING TENDONS AND ANCHORAGES		P		SEC. 10.8 & 10.9	Art. 2.4 & 3.6
X	c. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND ANCHOR BOLTS		P		SEC. 6.1, 6.3.1, 6.3.6 & 6.3.7	Art. 3.2 E & 3.4
X	d. PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS		P			Art. 2.6 B & 2.4 G.1.b
	3. VERIFY COMPLIANCE OF THE FOLLOWING DURING CONSTRUCTION:					
X	a. MATERIALS AND PROCEDURES WITH THE APPROVED SUBMITTALS		P			Art. 1.5
X	b. PLACEMENT OF MASONRY UNITS AND MORTAR JOINT CONSTRUCTION		P			Art. 3.3 B
X	c. SIZE AND LOCATION OF STRUCTURAL MEMBERS		P			Art. 3.3 F
X	d. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION.		P		SEC. 1.2.1 (e), 6.2.1 & 6.3.1	
	e. WELDING OF REINFORCEMENT		C		SEC. 6.1.6.1.2	
X	f. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40° F (4.4° C)) OR HOT WEATHER (TEMPERATURE ABOVE 90° F (32.2° C))		P			Art. 1.8 C & 1.8 D
	g. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE		C			Art. 3.6 B
	h. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE		C			Art. 3.5 & 3.6 C
	i. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS		C <sup>(b)</sup> /P <sup>(c)</sup>			Art. 3.3 B.9 & 3.3 F.1.b
X	4. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS		P			Art. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3, & 1.4 B.4

- a. FREQUENCY REFERS TO THE FREQUENCY OF INSPECTION, WHICH MAY BE CONTINUOUS DURING THE LISTED TASK OR PERIODICALLY DURING THE LISTED TASK, AS DEFINED IN THE TABLE.  
NR = NOT REQUIRED, P = PERIODIC, C = CONTINUOUS
- b. REQUIRED FOR THE FIRST 5000 SQUARE FEET (465 SQUARE METERS) OF AAC MASONRY.
- c. REQUIRED AFTER THE FIRST 5000 SQUARE FEET (465 SQUARE METERS) OF AAC MASONRY.

APPLIES	TYPE	CONT	PERIODIC
X	1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	X
X	2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X
X	3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	-	X
X	4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	-
X	5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	X

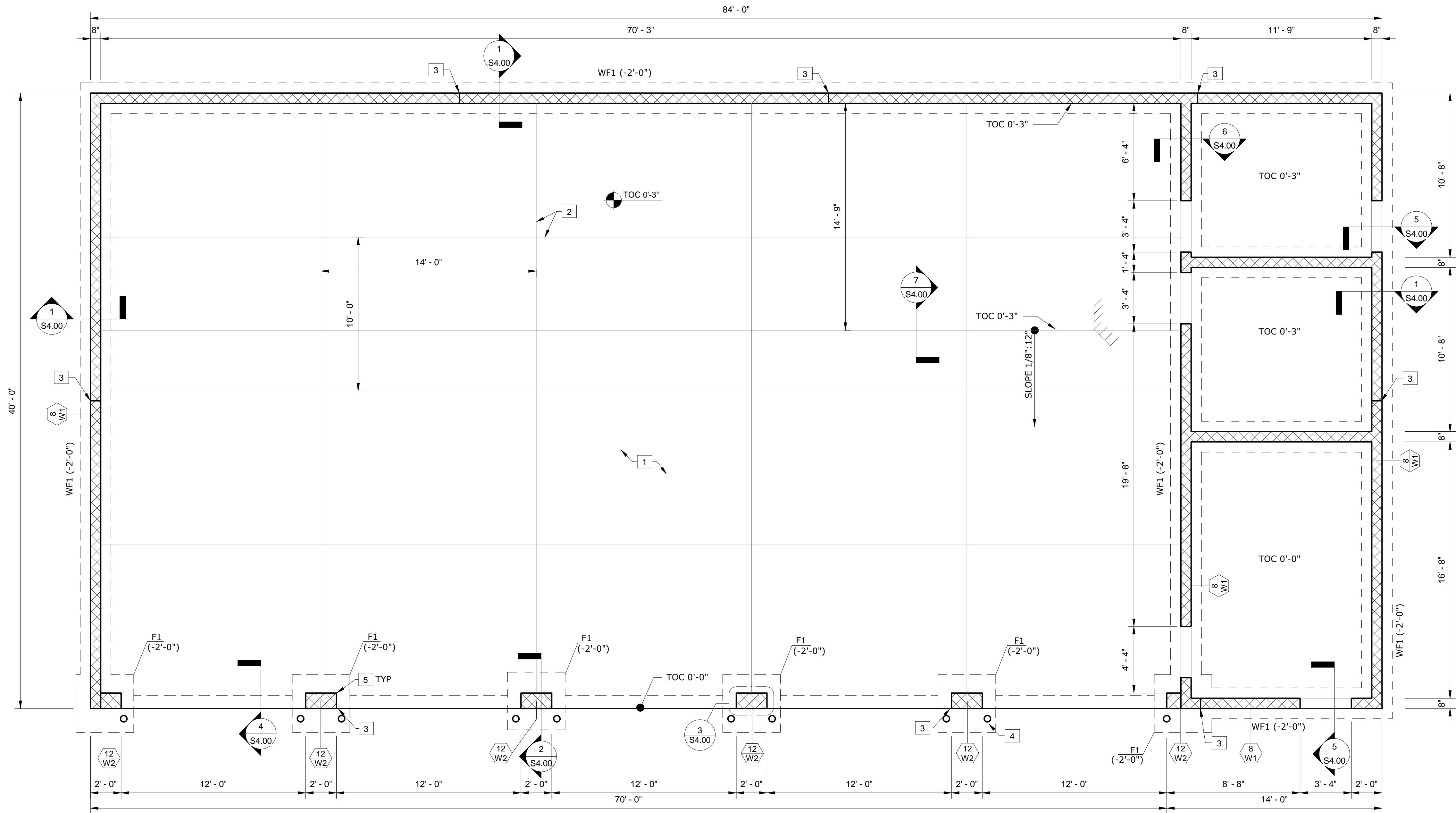
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CONSTRUCTION,  
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**DRAWN BY:** AJC  
**DESIGNED BY:** NYO  
**QUALITY CHECK:** PMH  
**DATE:** 12/13/22  
**JOB NO:** M22-075

**WETHER PROVIDENCE PUBLIC WORKS GARAGE**  
**BROOKHAVEN ROAD, WALLINGFORD, PA 19086**

## SPECIAL INSPECTIONS



## 4 FOUNDATION PLAN

1/4" = 1'-0"

### FOUNDATION PLAN NOTES

- FINISH FLOOR SLAB ELEVATION = 0'-0" UNO
- TOP OF FOOTING ELEVATION = -2'-0" UNO
- FOUNDATION MEMBERS DESIGNATED AS FOLLOWS:
  - F# FOOTING MARK (SEE FOOTING SCHEDULE)
  - WF# WALL FOOTING (SEE WALL FOOTING SCHEDULE)
- COORDINATE W/ ARCH, MECH, ELEC, AND PLUMBING DRAWINGS FOR FLOOR SLOPES, DRAINS, OPENINGS, DEPRESSIONS, ETC. NOT SHOWN ON PLAN.
- REFER TO ARCH DRAWINGS FOR DIMENSIONS NOT INDICATED.
- FOR GENERAL STRUCTURAL NOTES, REFER TO S0.00 TO S0.02.
- REFER TO TYPICAL FOUNDATION DETAILS ON S6.00.
- ALL WALL FOOTINGS SHALL BE INSTALLED CENTERED ON FOUNDATION WALL UNO ON PLAN.
- WFX (X'-X") DENOTES WALL FOOTING W/ (TOP), SEE SCHEDULE

### LEGEND

- # CMU WALL NOMINAL THICKNESS
- W# WALL REINFORCEMENT PER SCHEDULE
- CJ CONTROL JOINT

### GENERAL NOTES

- ALL DIMENSIONS HAVE BEEN FURNISHED BY THE ARCHITECT. IF THERE ARE ANY DISCREPANCIES CONTACT THE ENGINEER THROUGH THE ARCHITECT.
- FOR GENERAL STRUCTURAL NOTES SEE S0.00, S0.01 & S0.02
- CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS

### FLAG NOTES

- 6" CONCRETE SLAB-ON-GRADE WITH WWF 6X6 - W2.1X2.1 CENTERED IN SLAB OVER 6" GRAVEL. SEE TYPICAL DETAIL FOR MORE INFORMATION
- SLAB ON GRADE CONTROL JOINTS, SEE TYPICAL DETAILS
- MASONRY CONTROL JOINTS, SEE TYPICAL DETAILS
- STEEL BOLLARD, SEE TYPICAL DETAILS
- WRAP 6X6 WIRE MESH AT EACH PIER CORNER IN SLAB

### PIER FOOTING (F) SCHEDULE

MARK	DIMENSION			REINFORCEMENT
	WIDTH (W)	LENGTH (L)	DEPTH (D)	
F1	3'-3"	3'-3"	12"	(5) #4 BARS E.W.

### WALL FOOTING (WF) SCHEDULE

MARK	DIMENSION		REINFORCEMENT
	WIDTH (W)	DEPTH (D)	
WF1	2'-6"	1'-0"	(3) #4 BARS CONT.

### CMU WALL REINFORCING SCHEDULE

MARK	VERTICAL	HORIZONTAL
W1	#5 BARS @ 48" O.C.	(2) #4 BARS IN FULLY GROUTED BOND BEAM AT TOP OF WALL. STANDARD WEIGHT (NO. 9) LADDER OR WIRE JOINT REINFORCEMENT @ 16" O.C. VERTICAL SPACING
W2	2 #5 BARS @ 16" O.C.	(2) #4 BARS IN FULLY GROUTED BOND BEAM AT TOP OF WALL. STANDARD WEIGHT (NO. 9) LADDER OR WIRE JOINT REINFORCEMENT @ 8" O.C. (EVERY COURSE)

- NOTES:
- ALL WALLS 8" NOMINAL CMU BLOCK.
  - FULLY GROUT WALLS BELOW GRADE.
  - REINFORCE AT CORNERS AND OPENINGS PER TYPICAL DETAILS

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FOR REVIEW

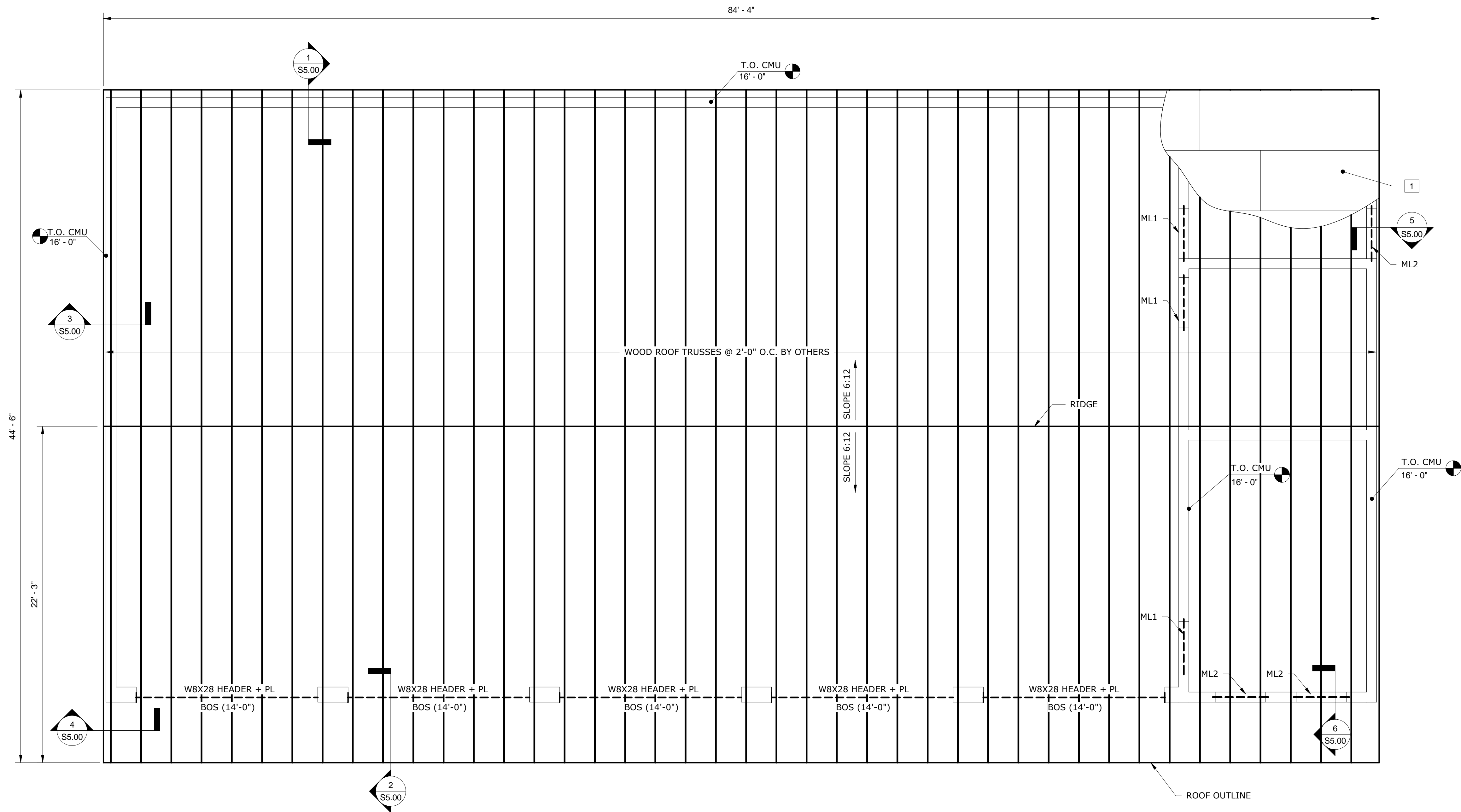
ISSUE FOR BID	PROGRESS CHECK - NOT FOR DISTRIBUTION	75% PROGRESS	REVISION
03/29/23	12/1/22	08/09/22	DATE
0	B	A	REV



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NETHER PROVIDENCE PUBLIC WORKS GARAGE  
BROOKHAVEN ROAD, WALLINGFORD, PA 19086

## FOUNDATION PLAN



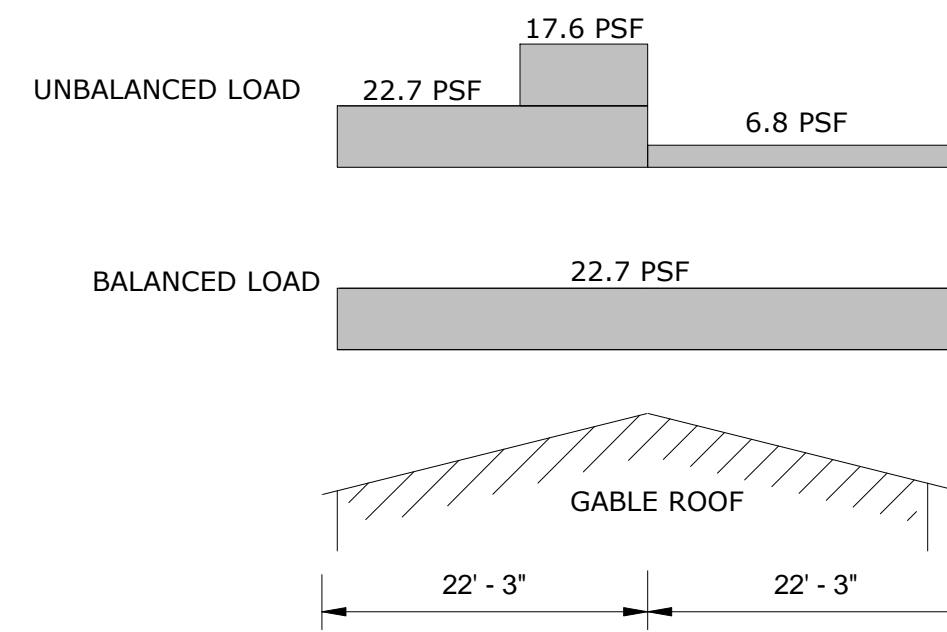
1 ROOF FRAMING PLAN  
1/4" = 1'-0"

### GENERAL NOTES

1. ALL DIMENSIONS HAVE BEEN FURNISHED BY THE ARCHITECT. IF THERE ARE ANY DISCREPANCIES CONTACT ENGINEER THROUGH ARCHITECT.
2. FOR GENERAL STRUCTURAL NOTES SEE S0.00, S0.01 & S0.02
3. FOR DETAILS SEE S4.00
4. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS.
5. TRUSS BLOCKING AND BRACING PER TRUSS MANUFACTURER PLANS

### FLAG NOTES

- 1 PROVIDE 5/8 SHEATHING W/8d NAILS @ 6" O.C AT BOUNDARIES, 6" O.C. ALL OTHER EDGE PANELS AND 12" O.C. FIELD. BLOCKING NOT REQUIRED



NOTE: UNBALANCED CONDITION MIRRORS ABOUT RIDGE

2 UNBALANCED SNOW DRIFT DETAIL  
12" = 1'-0"

### MASONRY LINTEL SCHEDULE (ML)

NAME	QUANTITY	HEIGHT	WIDTH	REINFORCEMENT	COMMENTS
ML1	2	8"	4"	(1) #3 BOTTOM IN EACH	PRECAST SOLID CONCRETE
ML2	-	16"	8"	(2) #5 BAR BOTTOM	MASONRY LINTEL

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FOR REVIEW

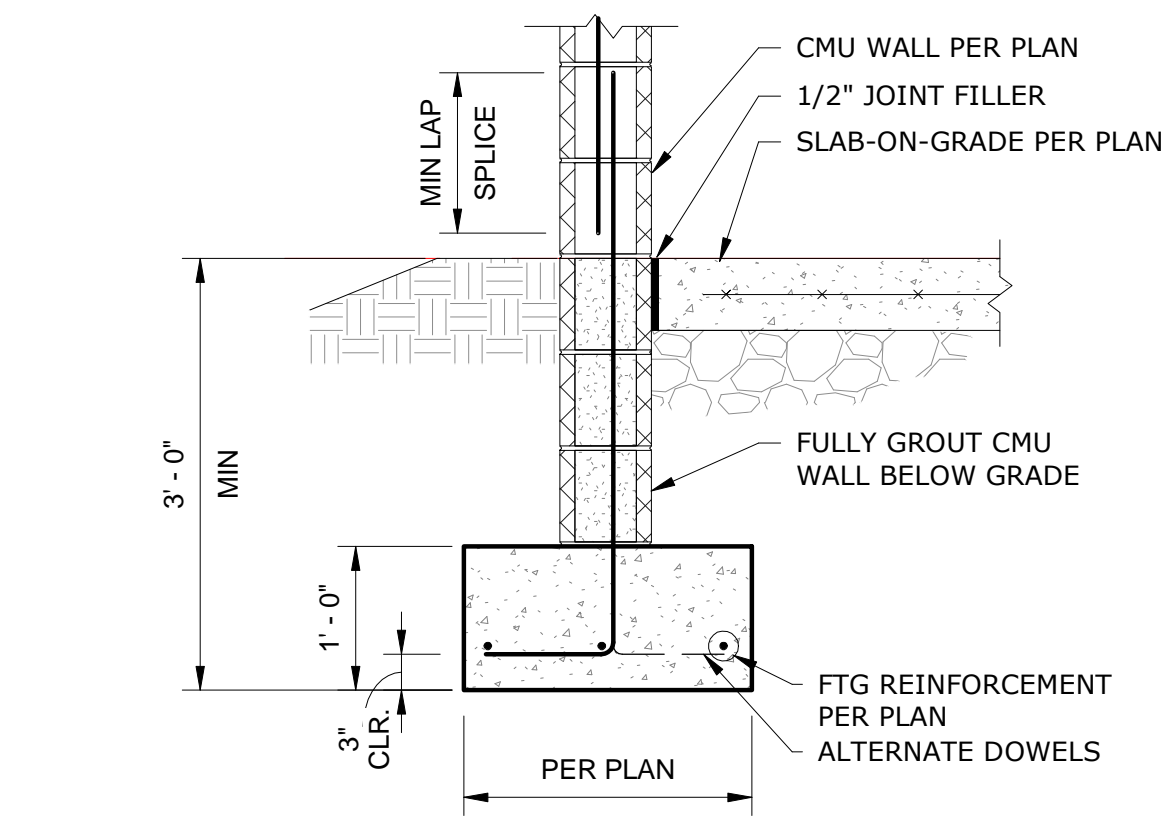
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B	12/13/22	PROGRESS CHECK - NOT FOR DISTRIBUTION
A	08/09/22	75% PROGRESS



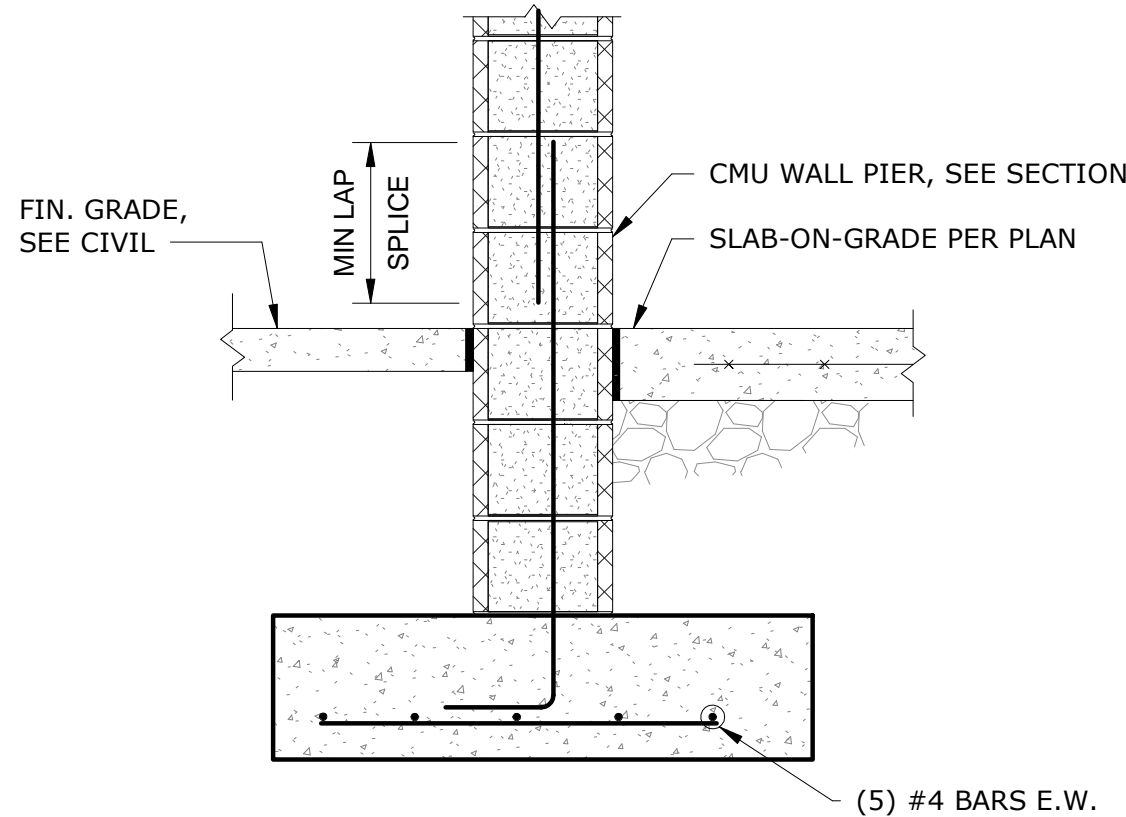
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DESIGNED BY: NYO  
QUALITY CHECK: PMH  
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JOB NO: M22-075

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BROOKHAVEN ROAD, WALLINGFORD, PA 19086

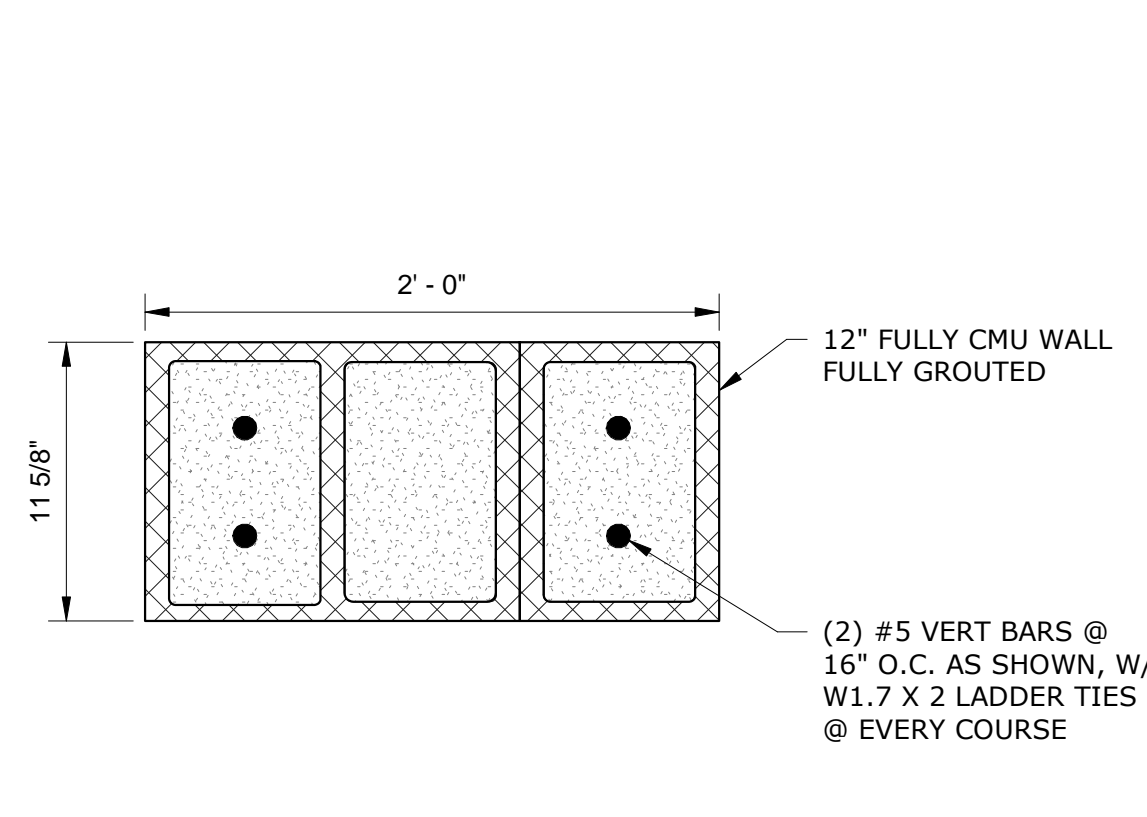
### ROOF FRAMING PLAN



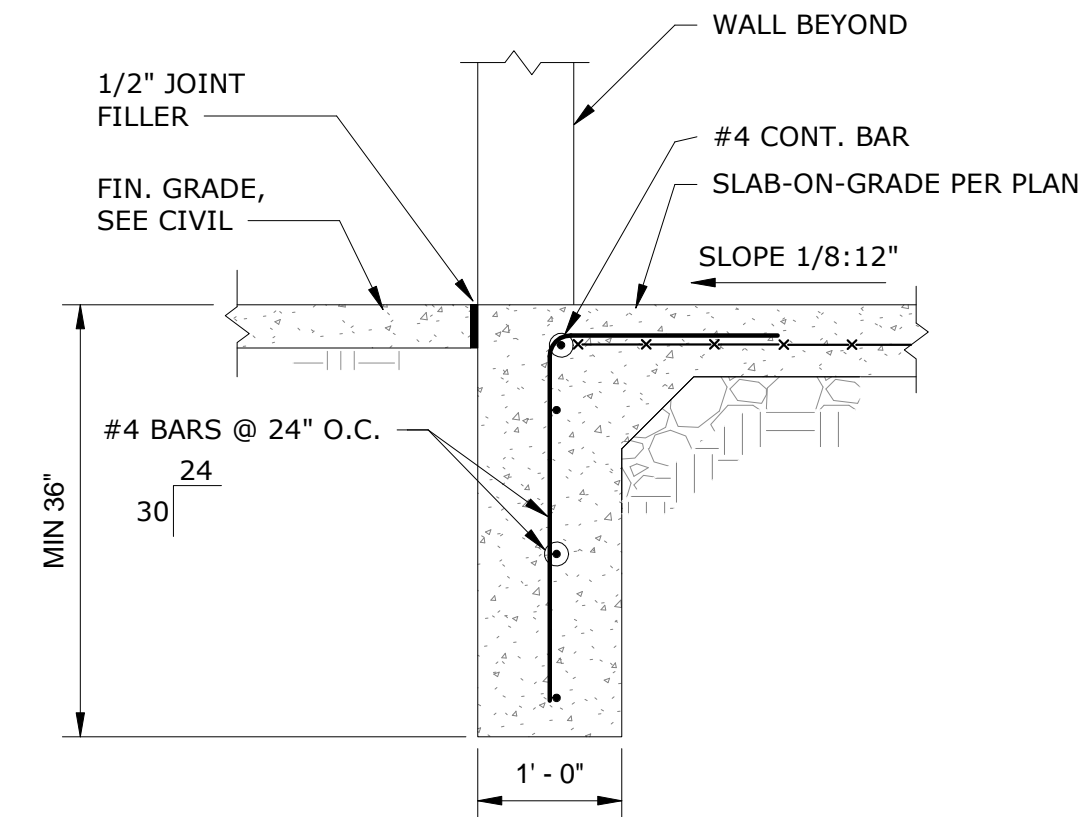
1 SECTION AT EXT. WALL FOOTING  
3/4" = 1'-0"



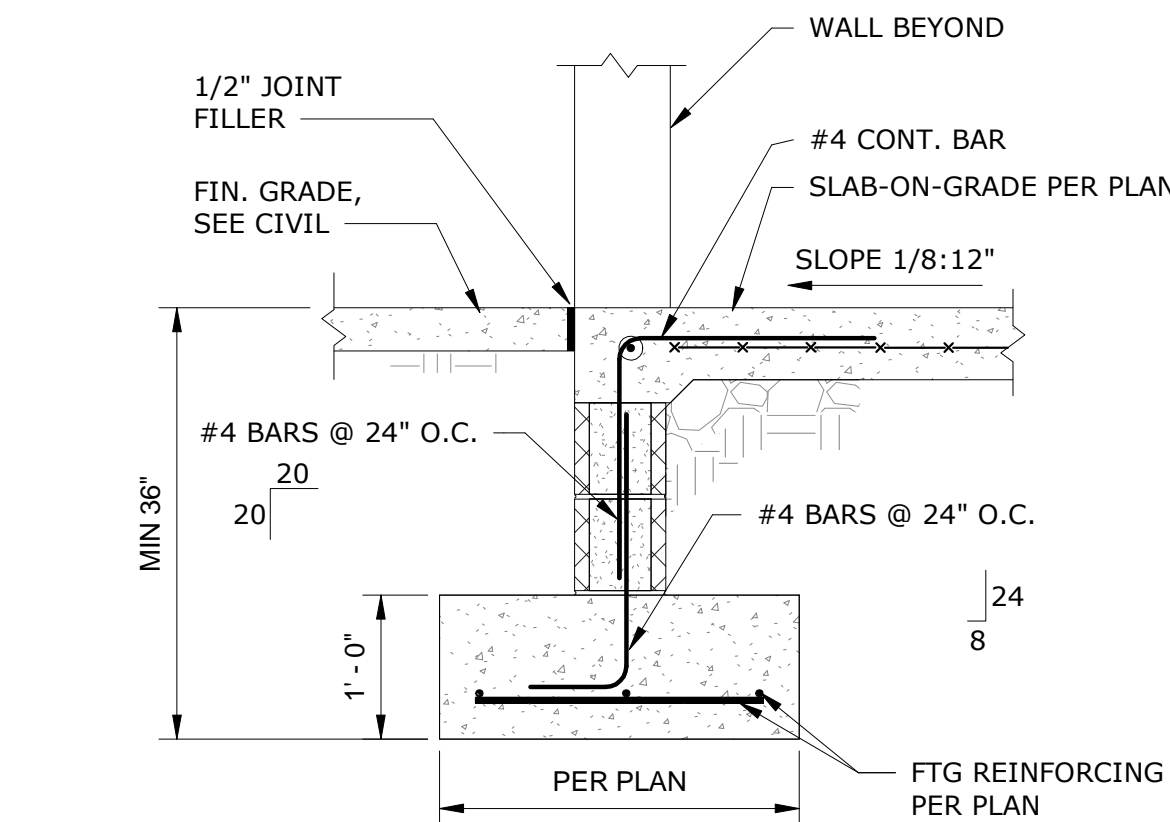
2 SECTION AT FOOTING F1  
3/4" = 1'-0"



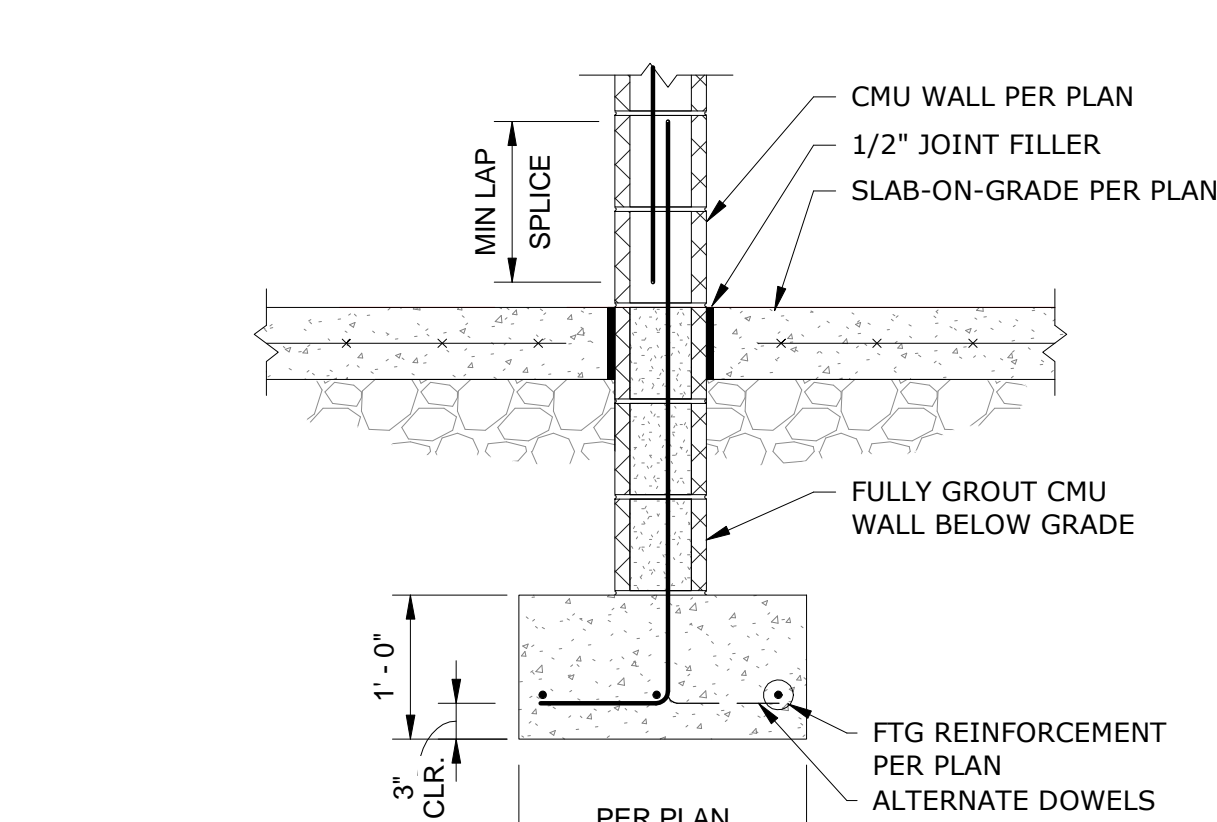
3 MASONRY WALL PIERS  
1 1/2" = 1'-0"



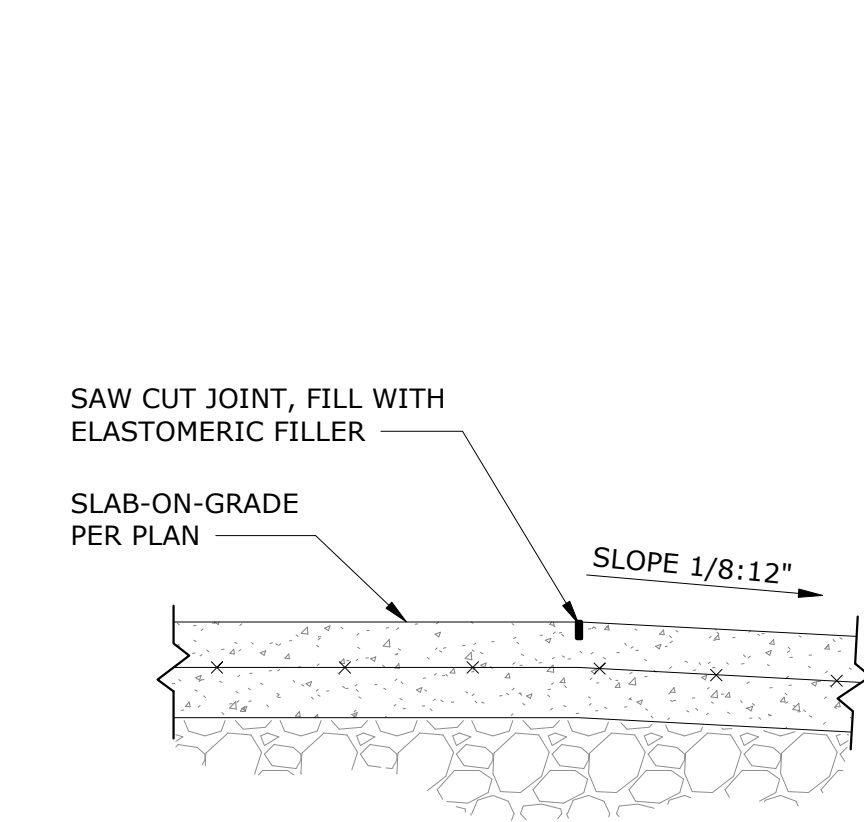
4 SECTION AT TURN DOWN SLAB  
3/4" = 1'-0"



5 SECTION AT EXT. DOOR  
3/4" = 1'-0"



6 SECTION AT INT. WALL FOOTING  
3/4" = 1'-0"



7 SECTION AT SLOPED SLAB  
1" = 1'-0"

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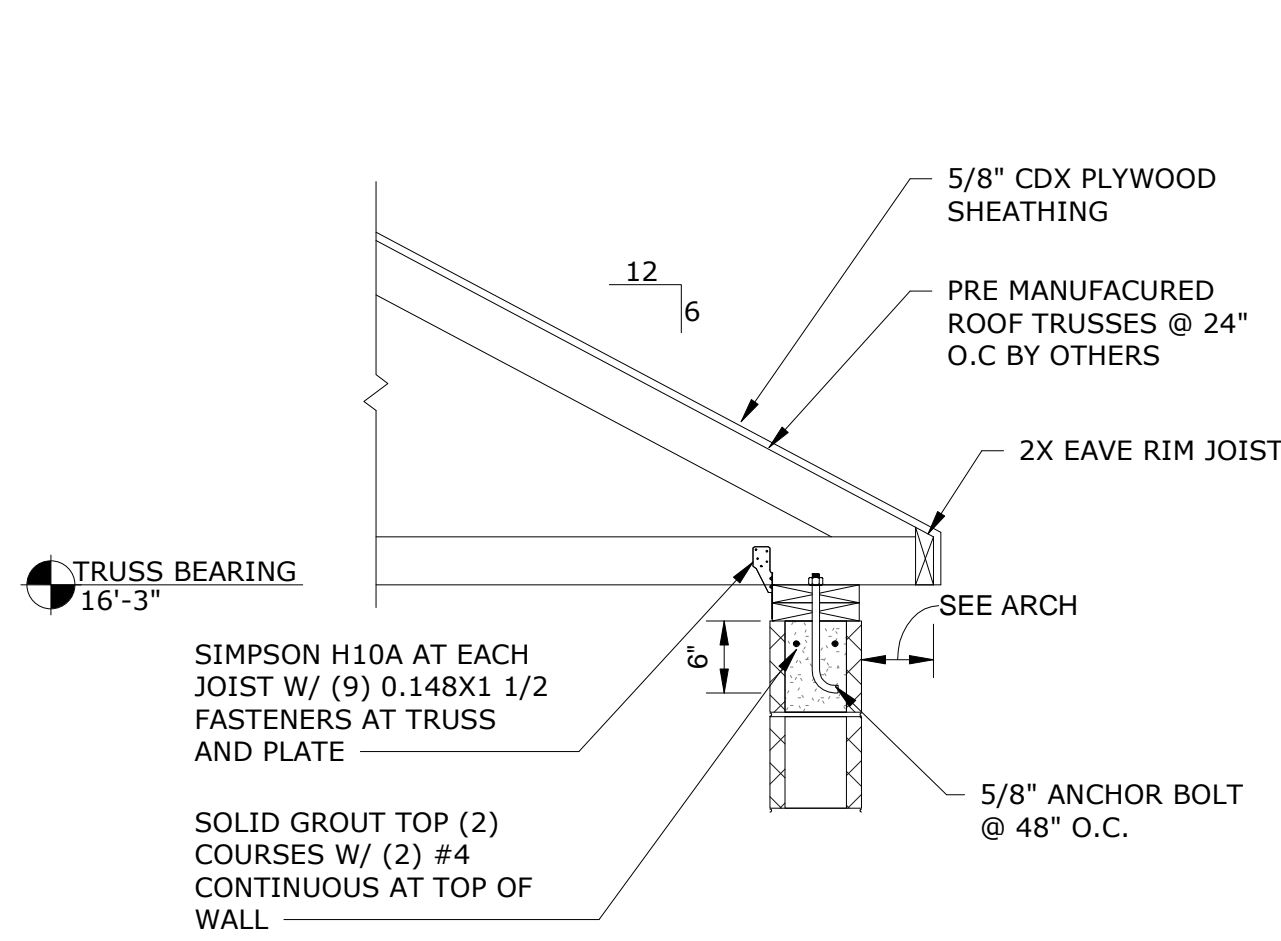
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A	08/09/22	75% PROGRESS



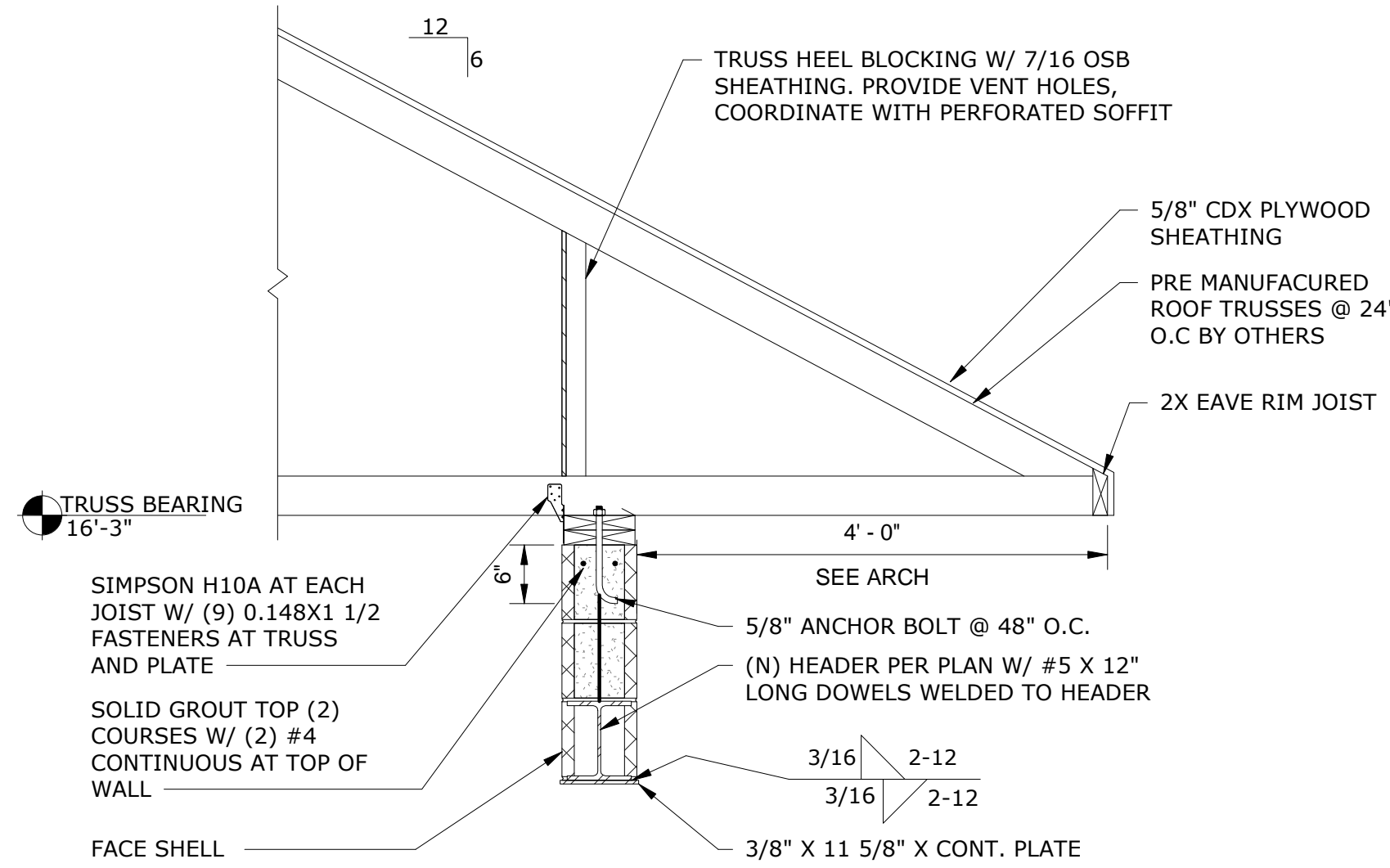
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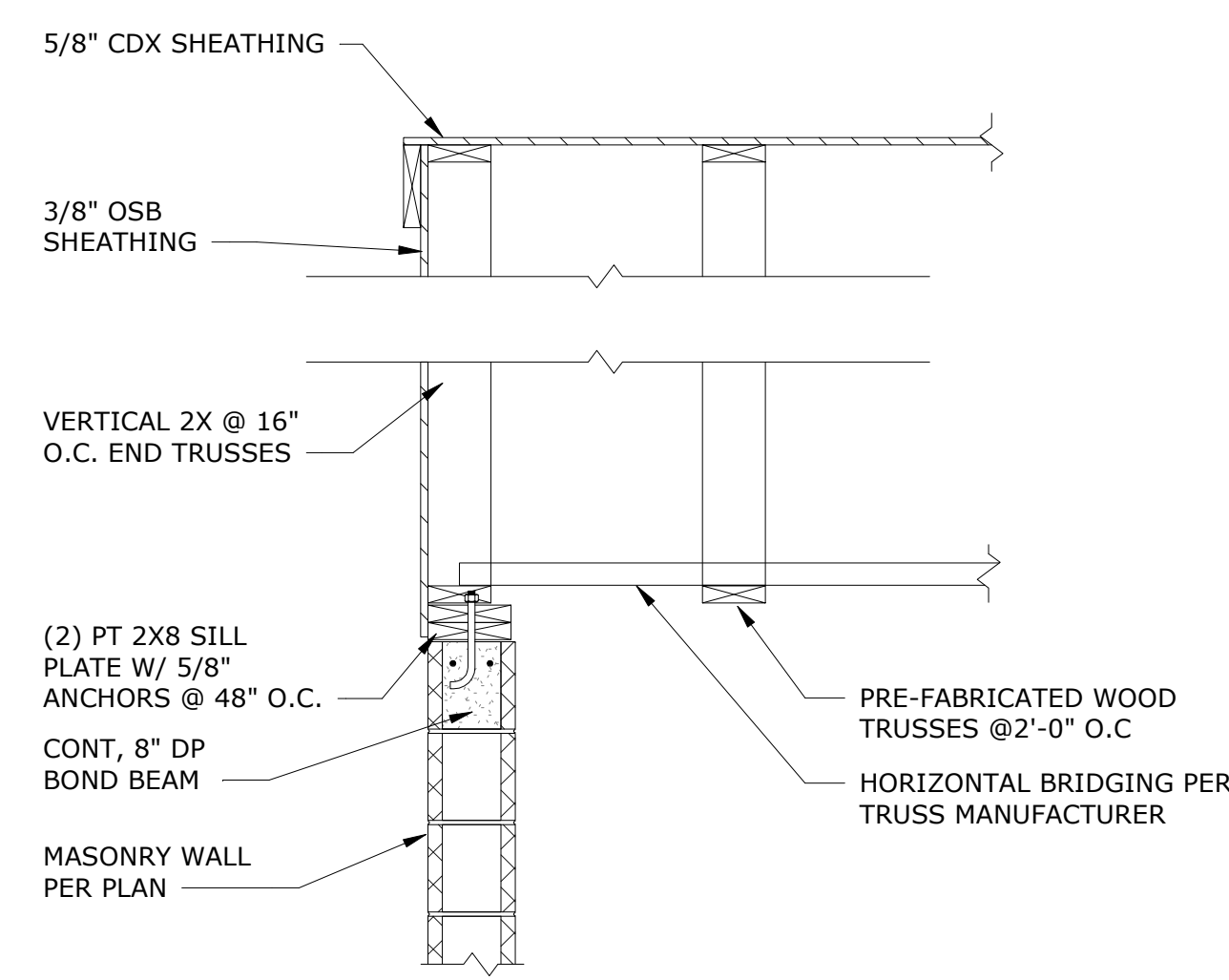
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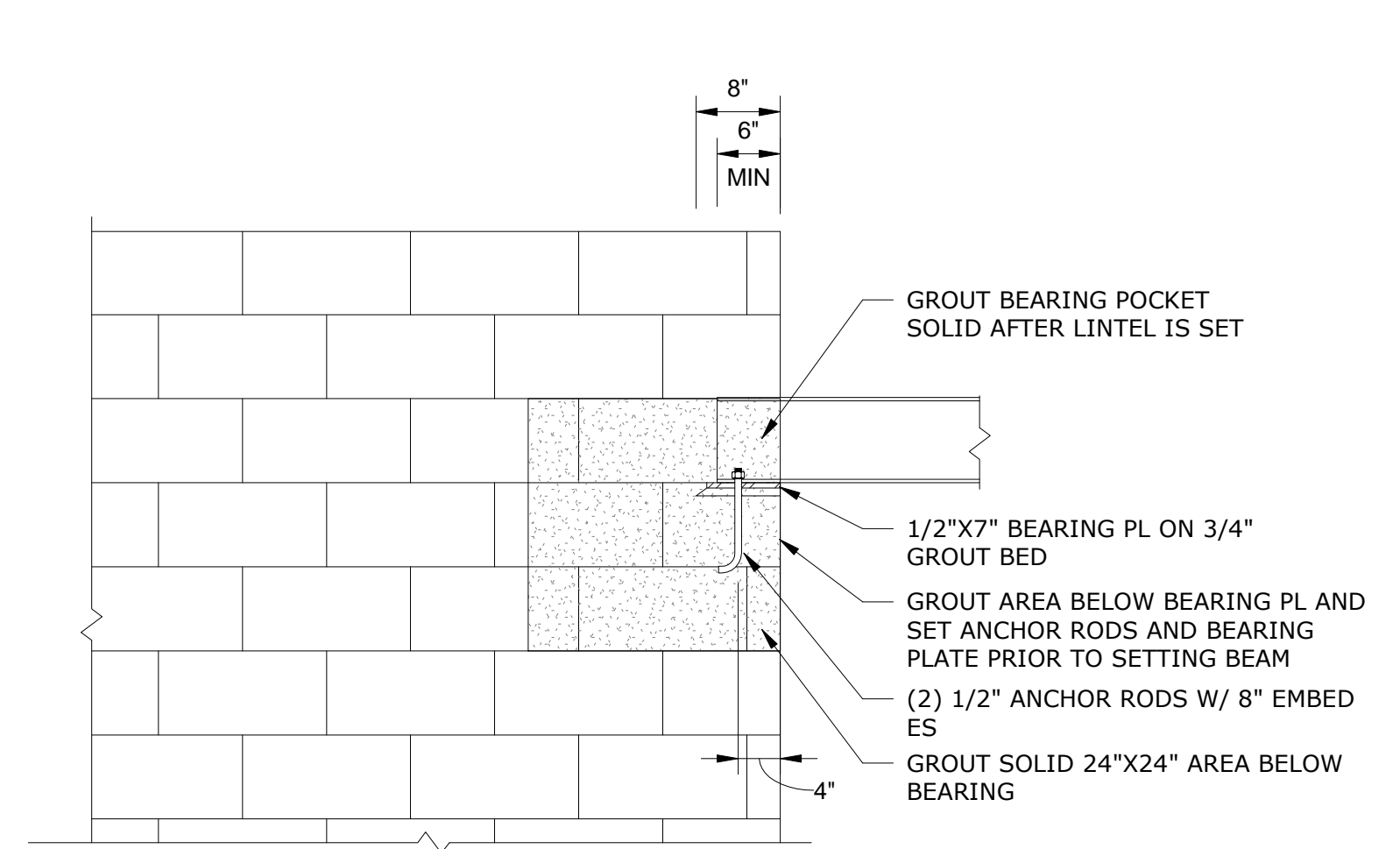
1 WOOD TRUSS TO CMU CONNECTION  
3/4" = 1'-0"



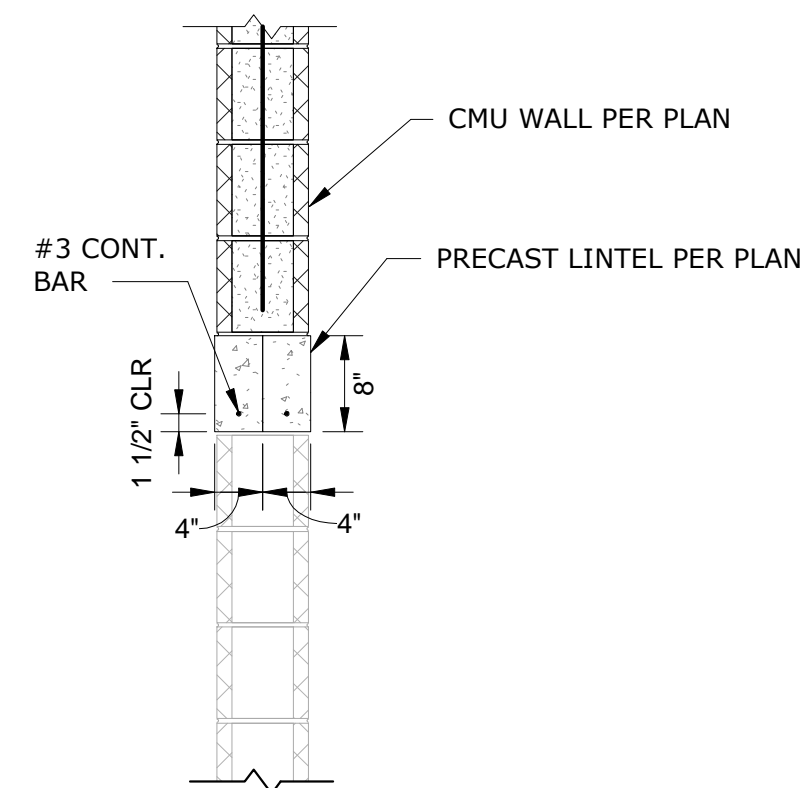
2 WOOD TRUSS TO CMU CONNECTION  
3/4" = 1'-0"



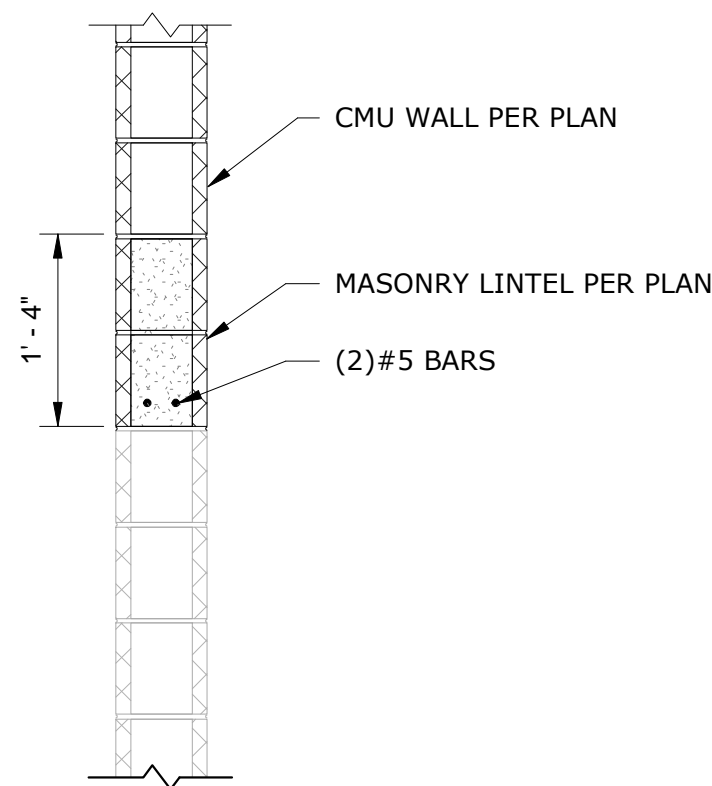
3 GABLE END  
3/4" = 1'-0"



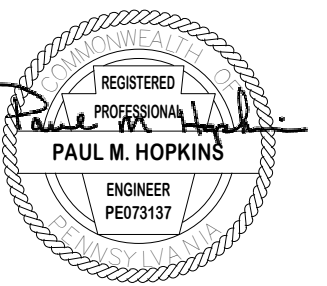
4 HEADER BEARING  
3/4" = 1'-0"



5 SECTION AT PRECAST LINTEL  
3/4" = 1'-0"



6 SECTION AT MASONRY LINTEL  
3/4" = 1'-0"



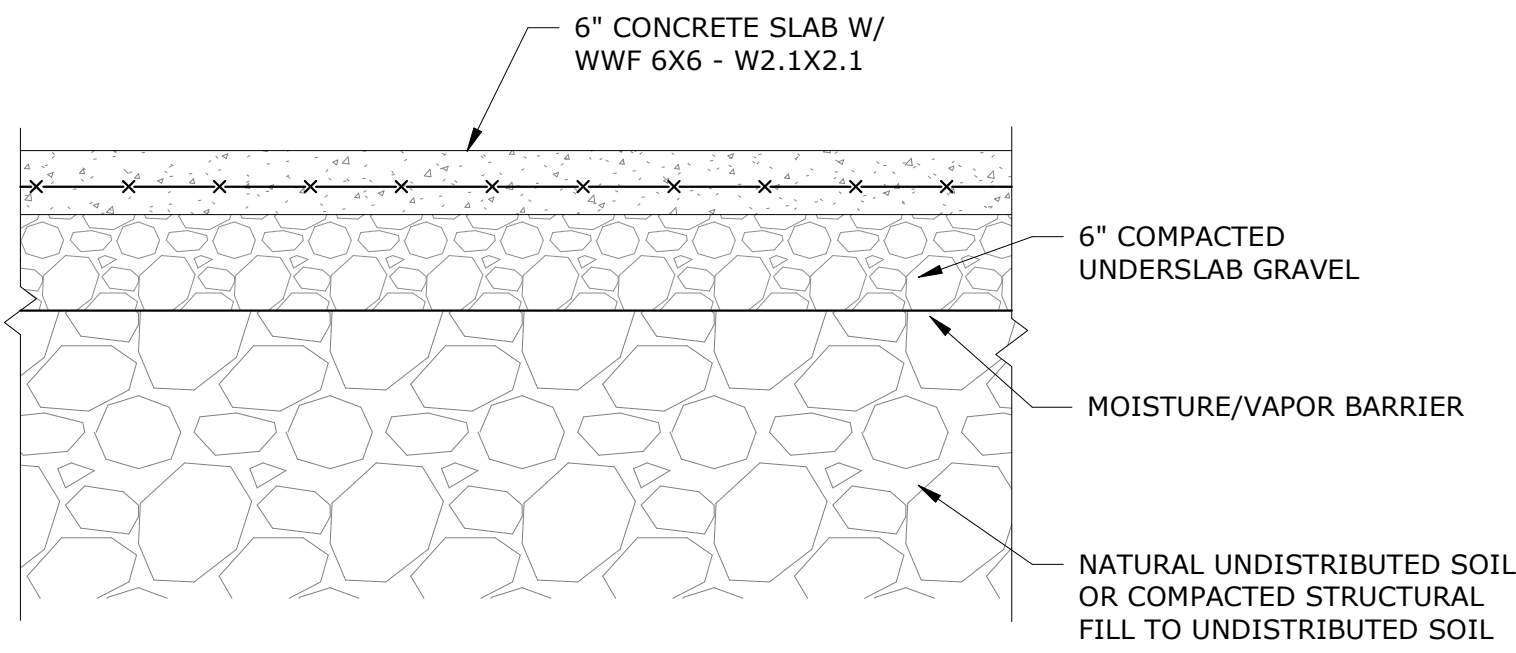
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B	12/13/22	PROGRESS CHECK - NOT FOR DISTRIBUTION
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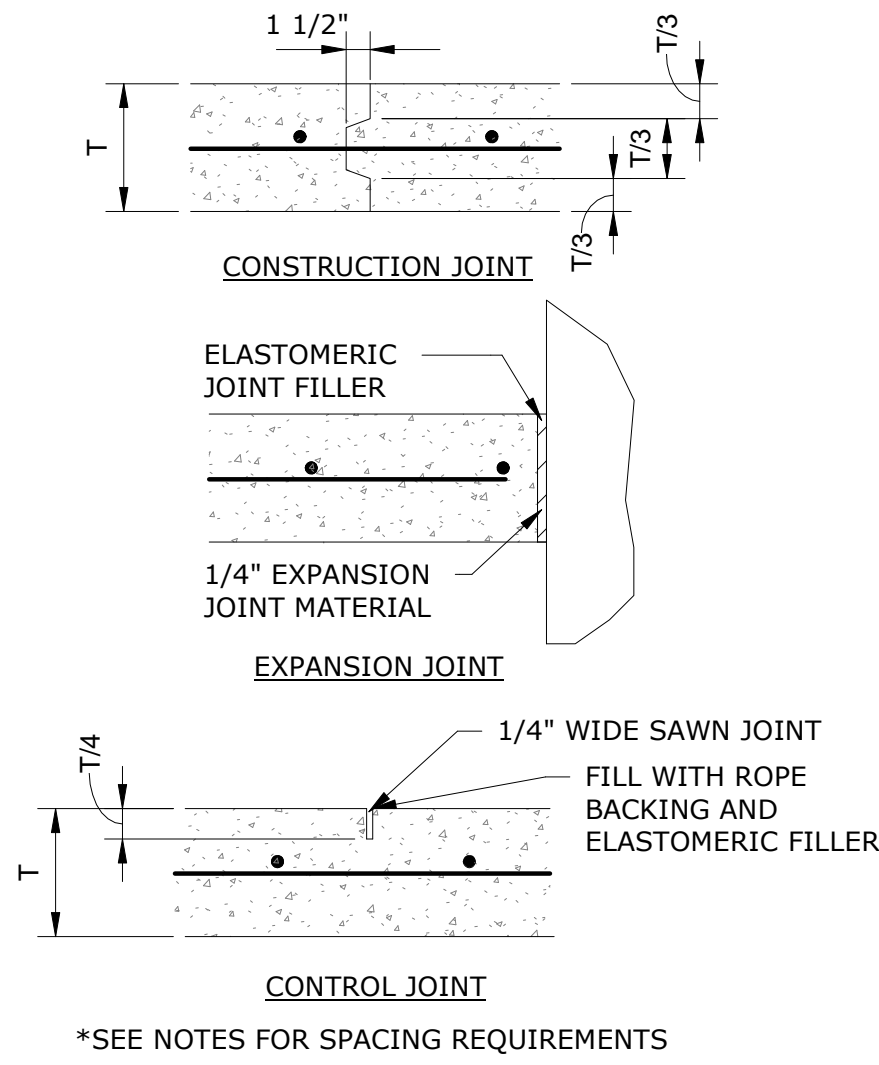
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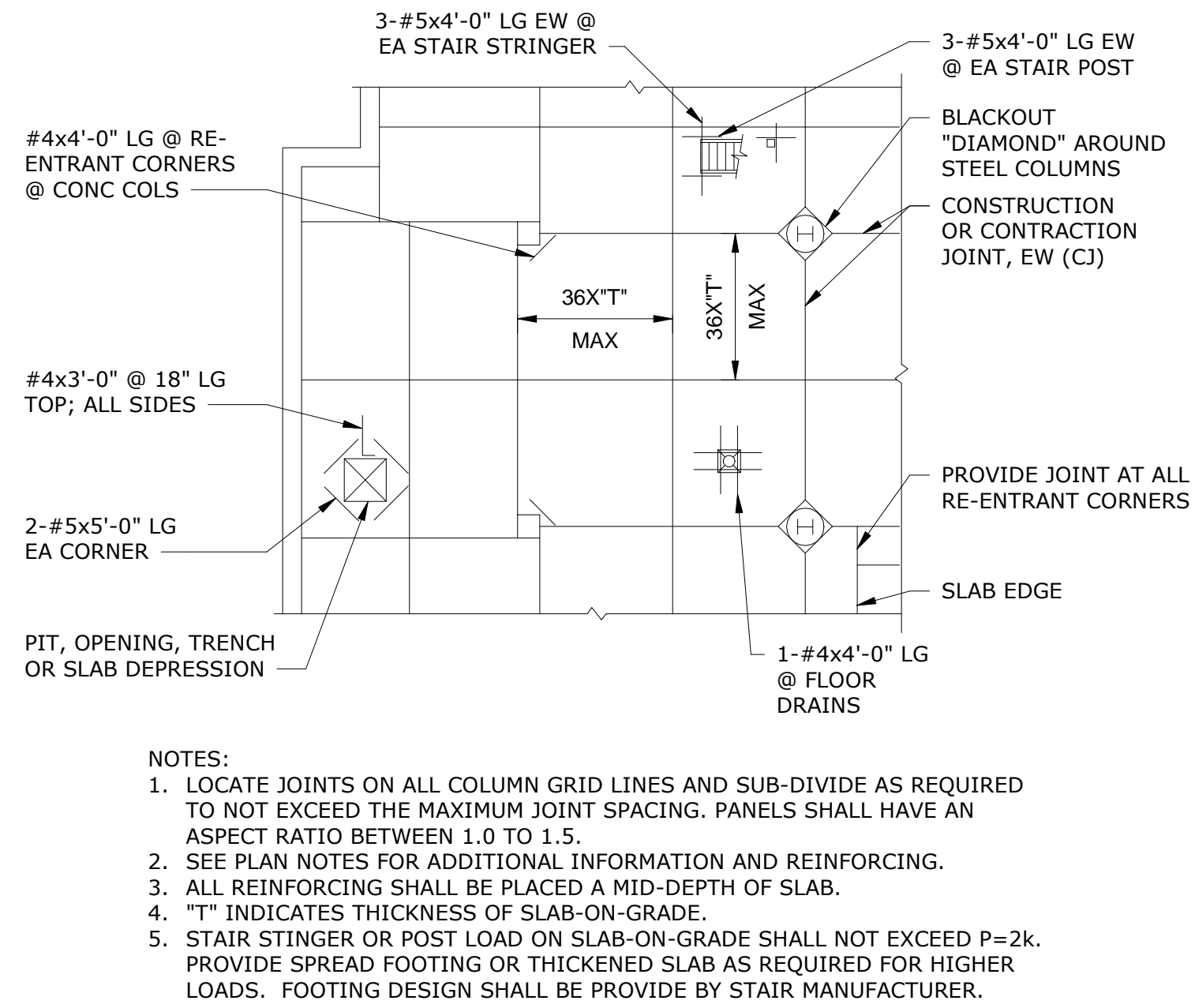
FRAMING DETAILS



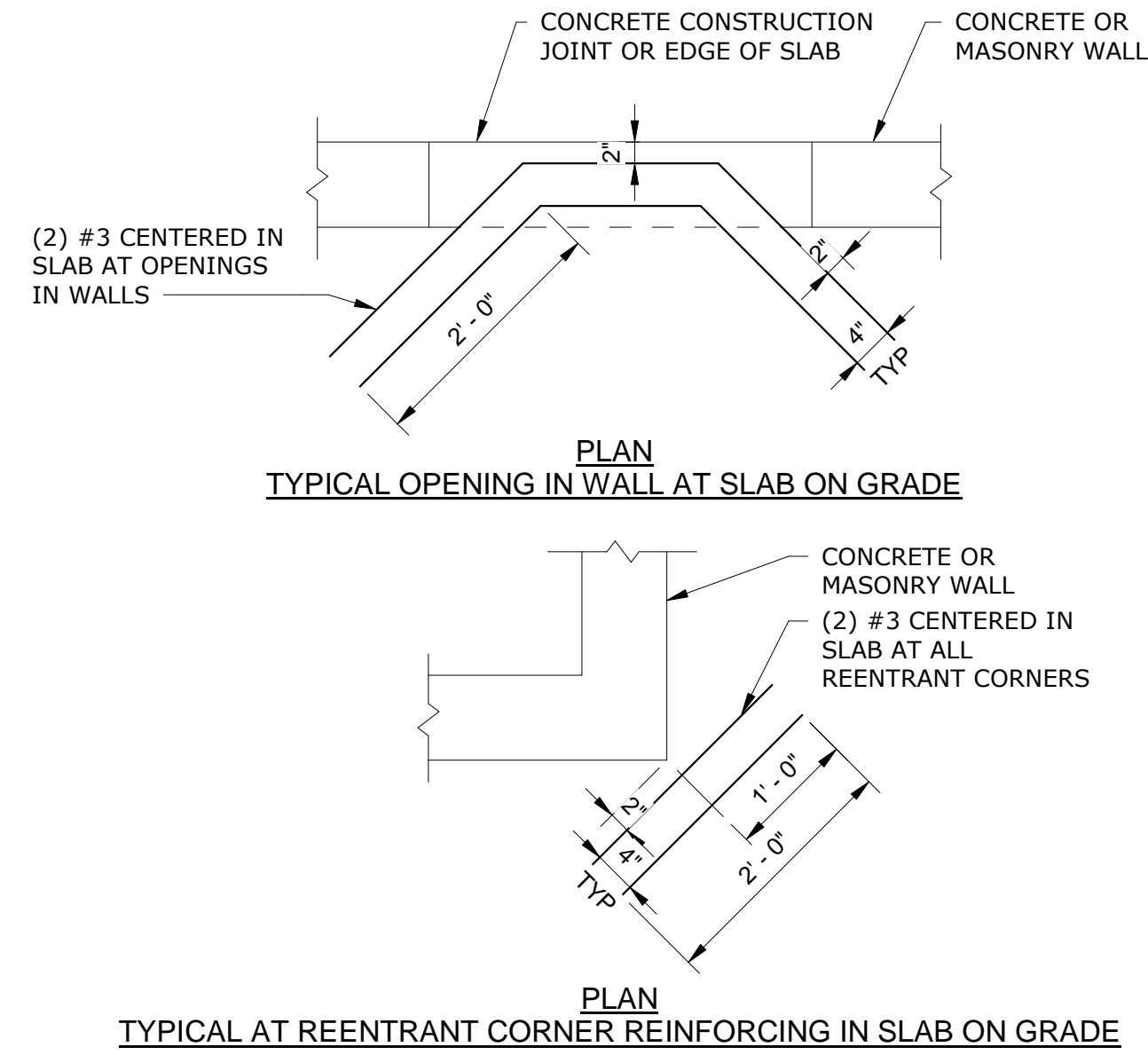
1 TYPICAL SLAB-ON-GRADE SECTION  
DO NOT SCALE



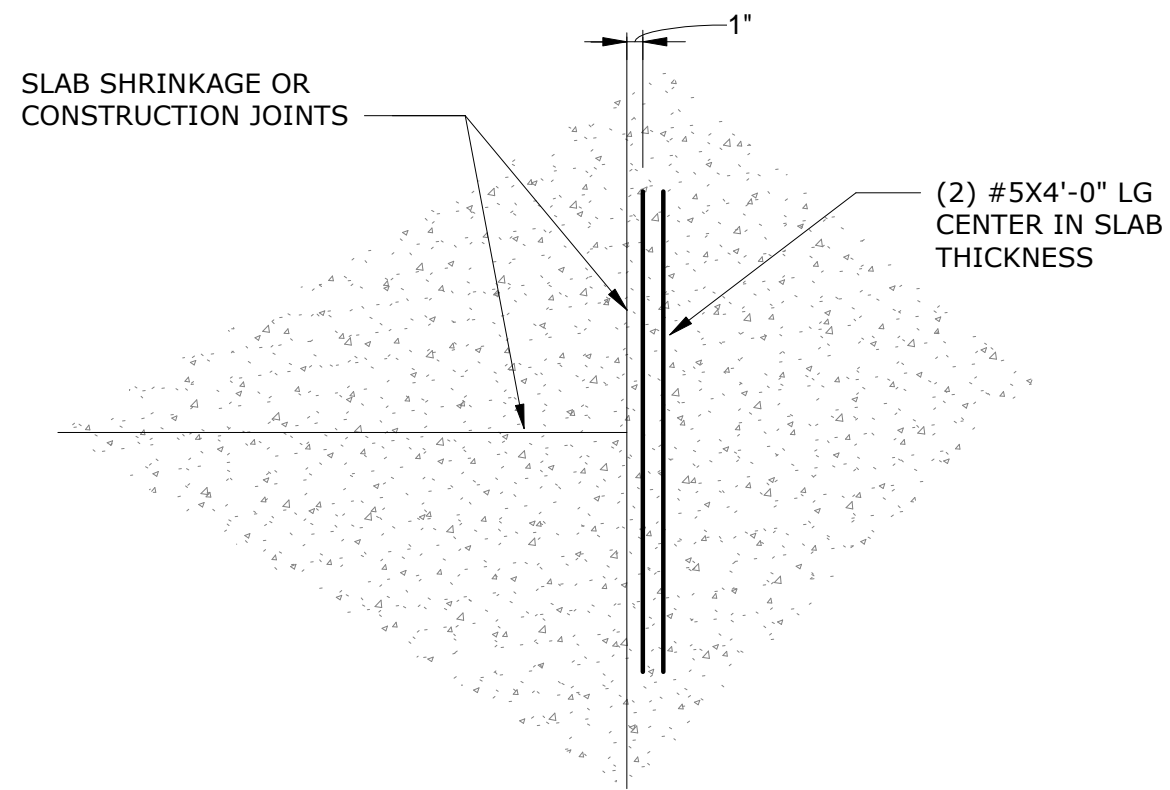
2 SLAB JOINT DETAILS  
DO NOT SCALE



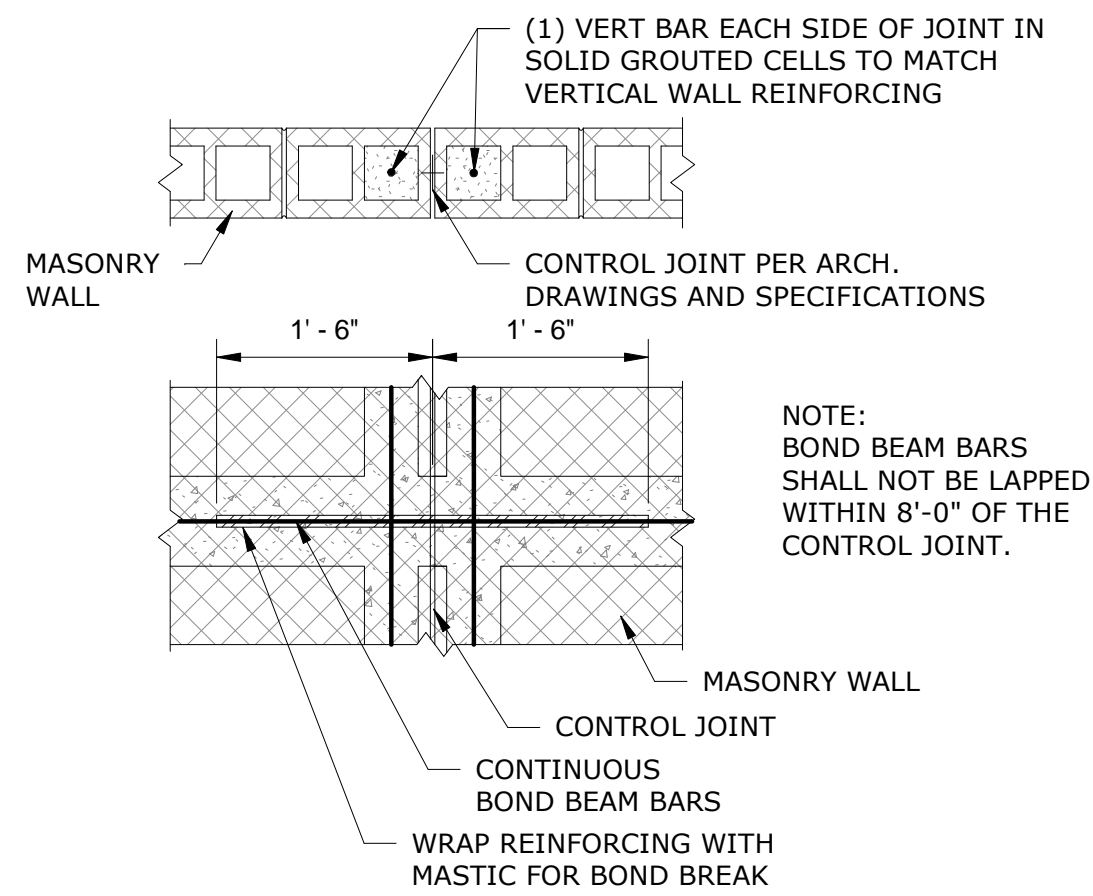
3 SLAB-ON-GRADE JOINT LAYOUT  
DO NOT SCALE



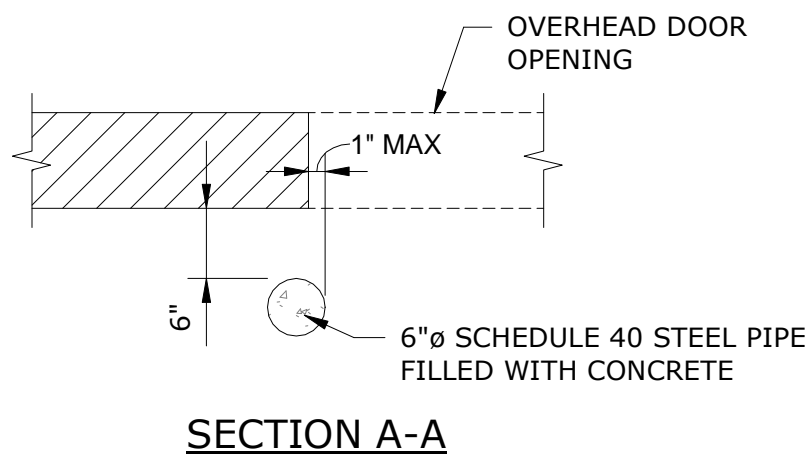
4 TYPICAL REENTRANT CORNER REINFORCING IN SLAB-ON-GRADE  
DO NOT SCALE



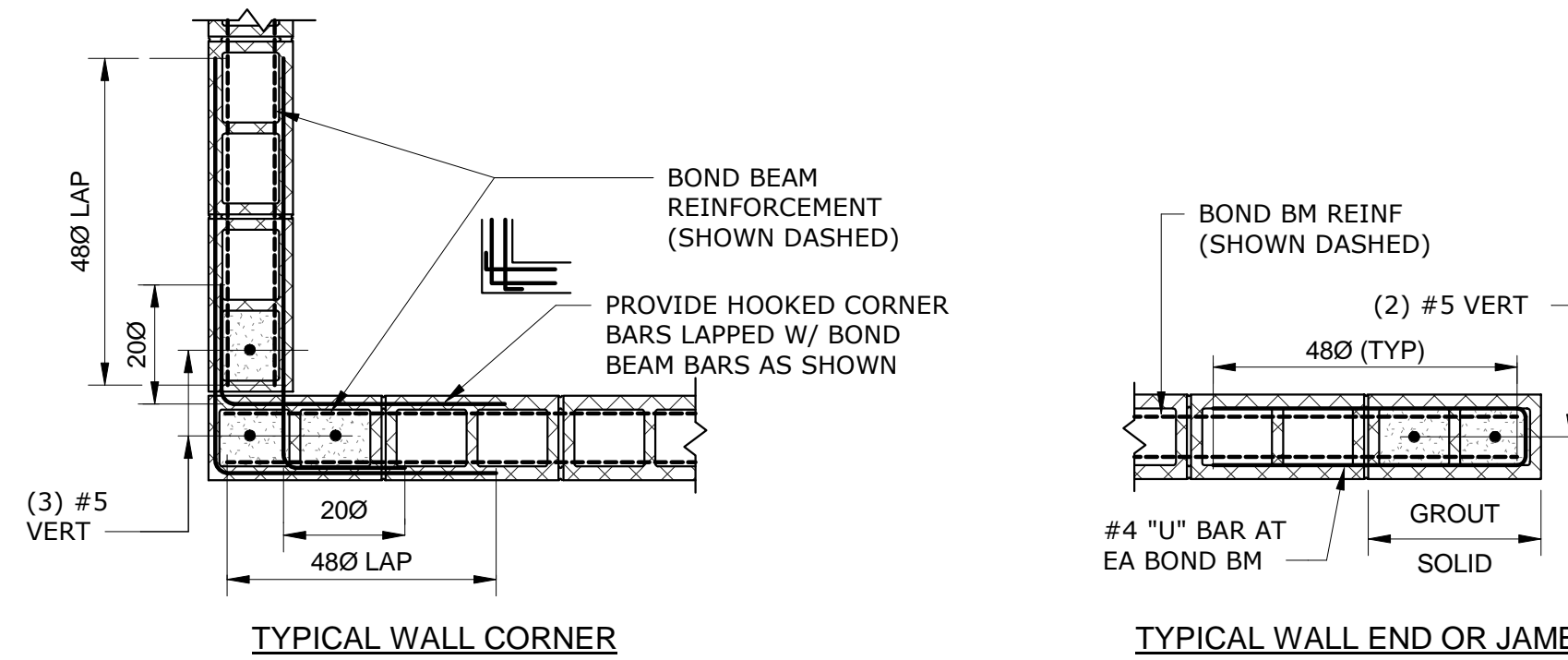
5 TYPICAL SLAB REINFORCEMENT AT TERMINATED JOINTS  
DO NOT SCALE



6 CONTROL JOINT IN MASONRY WALL  
DO NOT SCALE



7 TYPICAL DETAIL 8 INCH CMU WALL CONSTRUCTION  
DO NOT SCALE

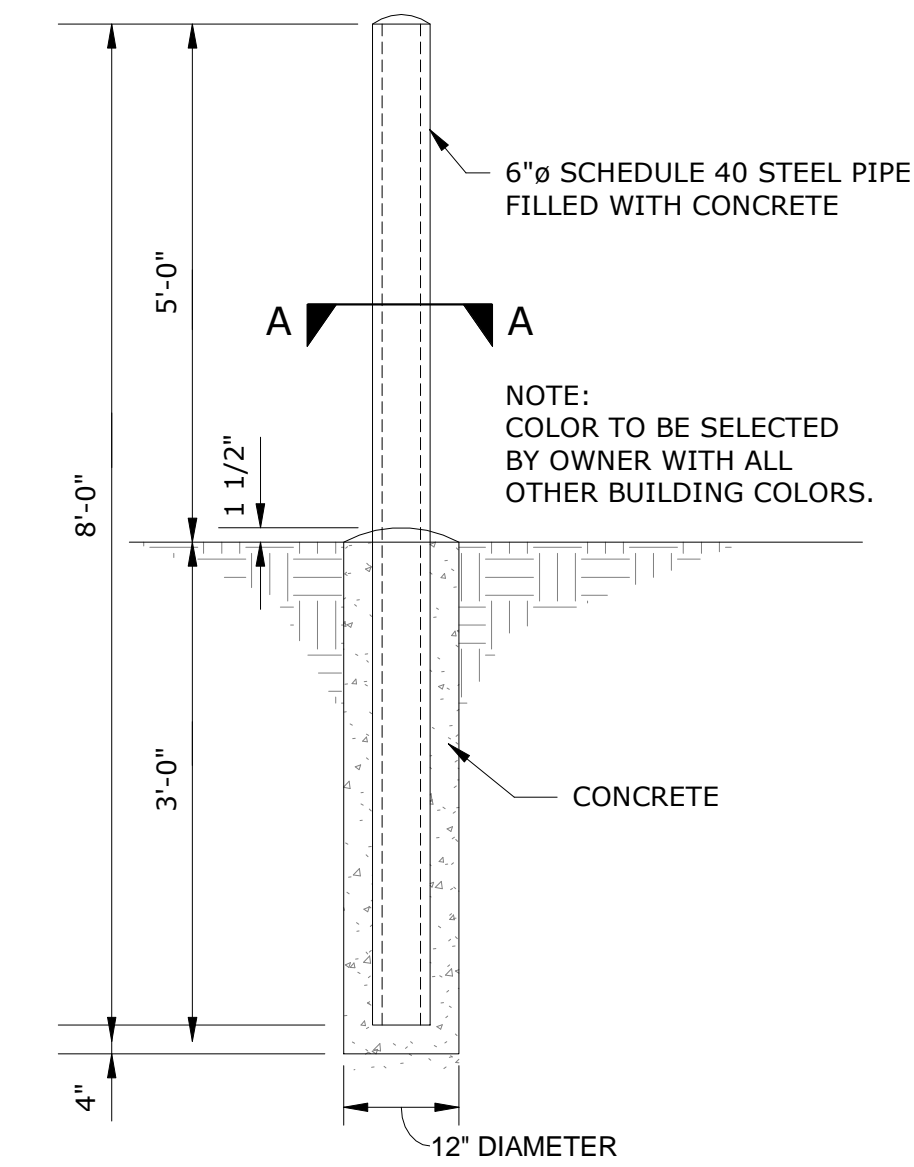


CAST-IN-PLACE (NONPRESTRESSED) CONCRETE	CONCRETE COVER
CAST AGAINST & EXPOSED TO EARTH	3"
EXPOSED TO EARTH OR WEATHER No. 6 THROUGH No. 18 BARS No. 5 BAR, W31 OR D31 WIRE, AND SMALLER	2" 1-1/2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND SLABS, WALLS, JOISTS No. 14 AND No. 18 BARS No. 11 BAR AND SMALLER BEAMS, COLUMNS PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS SHELLS, FOLDED PLATE MEMBERS No. 6 BAR AND LARGER No. 5 BAR, W31 OR D31 WIRE, AND SMALLER	1-1/2" 3/4" 1-1/2" 3/4" 1/2"

8 REINFORCING CONCRETE COVER  
DO NOT SCALE

BAR SIZE	AREA (IN²)	MASONRY		
		MINIMUM MASONRY COVER		
IN-LB		2"	3"	6"
#3	0.11	1'-3"	1'-0"	1'-0"
#4	0.20	2'-2"	1'-5"	1'-0"
#5	0.31	3'-4"	2'-3"	1'-2"
#6	0.44	6'-2"	4'-2"	2'-1"
#7	0.60	8'-5"	5'-7"	2'-10"
#8	0.79	12'-8"	8'-5"	4'-3"

9 MASONRY REINFORCING BAR SPLICE LENGTHS  
DO NOT SCALE



10 BOLLARD DETAIL  
12" = 1'-0"

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0	B	A	REV
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TYPICAL FOUNDATION DETAILS

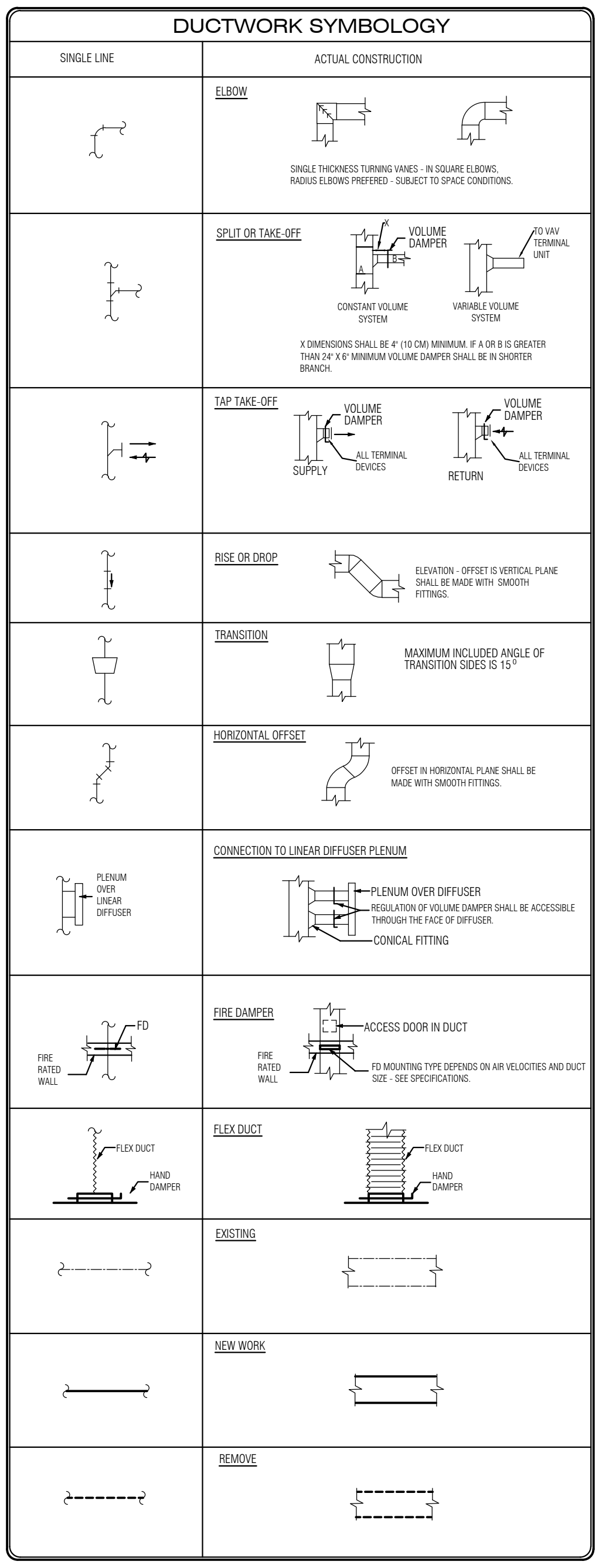
- MECHANICAL DUCTWORK/EQUIPMENT NOTES**
1. ALL DUCTWORK SHALL BE IN ACCORDANCE WITH SMACNA (SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION) STANDARDS.
  2. SHEET-METAL FITTINGS SHOWN ARE TO BE PROVIDED. NO SUBSTITUTIONS ALLOWED WITHOUT PRIOR CONSENT FROM ENGINEER AND WILL BE REQUIRED TO BE REPLACED IF INSTALLED.
  3. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
  4. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATING.
  5. SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. NOTIFY STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT.
  6. PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTS CONNECTING TO AIR MOVING EQUIPMENT.
  7. INSULATE ALL EXTERIOR AND CONCEALED SUPPLY AIR, ALL RETURN AIR AND ALL OUTSIDE AIR DUCTWORK, AS FOLLOWS:
    - A. DUCTWORK INSIDE OF BUILDING SHALL BE INSULATED WITH R-6 FIBROUS GLASS DUCT-WRAP WITH FOIL-DRAFT FLAME-RESISTANT VAPOR BARRIER. INSULATION SHALL BE FIRE-RATED IN ACCORDANCE WITH ASHRAE (AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS) 90A, 50/25 SMOKE DEVELOPMENT AND FLAME SPREAD REQUIREMENTS.
    - B. EXTERIOR SUPPLY AIR DUCTWORK SHALL BE INSULATED WITH 2-INCH FIBERGLASS DUCT BOARD. PROVIDE WEATHER-PROOF MEMBRANE FOR DUCTWORK. SEAL ALL JOINTS WATER-TIGHT. ALL MATERIALS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
  9. FLEXIBLE DUCT IS ALLOWABLE ON SUPPLY AIR AND RETURN AIR SYSTEMS ABOVE CEILINGS ONLY. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 10 FEET. FLEXIBLE DUCT SHALL BE FABRIC COVERED GALVANIZED STEEL, HELIX MECHANICALLY LOCKED TO THE FABRIC. THE FABRIC SHALL BE A LAMINATE OF ALUMINUM FOIL, FIBERGLASS AND ALUMINIZED POLYESTER WITH VAPOR BARRIER JACKET RATED AT 5500 FPM. INSULATION R-VALUE SHALL MATCH THE R-VALUE SPECIFIED FOR THE AIR SYSTEM SERVED. FLEXIBLE DUCTWORK SHALL BE EQUAL TO FLEXMASTER USA TYPE 3. THOROUGHLY CLEAN ALL NEW DUCTWORK AFTER INSTALLATION.
  11. DUCTWORK SCHEDULE
    - A. LOW PRESSURE - ALL SUPPLY AIR, RETURN AIR, EXHAUST AIR AND OUTSIDE AIR DUCTWORK TO BE 2" CONSTRUCTION, 2" STATIC, LEAKAGE CLASS B, SEAL CLASS 12. MATERIAL TO BE GALVANIZED STEEL UNLESS NOTED OTHERWISE.
  12. LOUVERS SHALL BE ALUMINUM CONSTRUCTION, 4-INCH DEEP, DRAINABLE BLADE TYPE WITH BIRDSCREEN. LOUVERS SHALL HAVE 2-COAT CUSTOM KYNAR FINISH IN COLOR AS SELECTED BY ARCHITECT. LOUVERS SHALL BE EQUAL TO GREENHECK MODEL ESD-453.

- HVAC GENERAL NOTES:**
1. INSTALL THERMOSTATS 48" ABOVE FINISHED FLOOR OR AS DIRECTED BY ARCHITECT. WHERE THERMOSTATS ARE LOCATED IN PUBLIC AREAS, PROVIDE PASSWORD PROTECTED MODELS OR LOCKING COVERS.
  2. MANUFACTURERS MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
  3. ALL CONDENSATE DRAIN LINES SHALL BE PIPED FULL SIZE OF UNIT DRAIN OUTLET AND PROVIDED WITH "P" TRAP. TERMINATE CONDENSATE DRAIN PIPING AT NEAREST DRAIN.
  4. PROVIDE EQUIPMENT AND PIPE SUPPORTS TO SUPPORT GRADE MOUNTED EQUIPMENT PIPING OUTSIDE THE BUILDING. PIPE SUPPORTS ON 8'-0" CENTER OR LESS ACCORDING TO HANGER SPACING.
  5. PROVIDE 1/4" WELDED WIRE MESH SCREEN AT ALL OUTSIDE AIR INTAKE AND EXHAUST LOUVERS AND WHERE SHOWN ON THE DRAWINGS.
  6. PROVIDE HANGERS, CLAMPS, OFFSETS EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
  7. ALL PIPING, WIRING, INSULATION ETC. INSTALLED IN HVAC AIR PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
  8. CONTROL WIRING FOR HVAC EQUIPMENT, WHETHER IT BE LINE OR LOW VOLTAGE, SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.
  9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC.
  10. ALL EQUIPMENT AND SYSTEMS SHALL BE FULLY TESTED AND BALANCED UPON COMPLETION OF INSTALLATION.
  11. TESTING AND BALANCING SHALL BE PROVIDED BY A COMPANY SPECIALIZING IN THE TESTING AND BALANCING OF HVAC SYSTEMS. THE TEST AND BALANCE COMPANY SHALL BE A MEMBER OF AABC OR NEBB. BALANCE AIRFLOWS WITHIN 10% OF SCHEDULED AIR FLOWS FOR ALL EQUIPMENT AND AIR DEVICES. IF AIR FLOW CANNOT BE BALANCED TO WITHIN 10%, PERFORM UP TO TWO PITOT TUBE TRAVERSSES, AS DIRECTED BY OWNERS REPRESENTATIVE, TO DETERMINE THE CAUSE OF THE DEFICIENCY. SUBMIT SIX COPIES OF THE BALANCING REPORT FOR REVIEW PRIOR TO FINAL INSPECTIONS.
  12. DESIGN CONDITIONS IS AS FOLLOWS:  
OUTDOOR SUMMER: 91 DEGREES DB / 75 DEGREES WB (ASHRAE 1%)  
INDOOR SUMMER: 74 DEGREES DB, 55% RH  
OUTDOOR WINTER: 11.6 DEGREES DB (ASHRAE 99.6%)  
INDOOR WINTER: 70 DEGREES DB

- MECHANICAL PIPING NOTES**
1. PIPE MATERIALS
    - A.1. CONDENSATE PIPING:
      - A. 3/4" DIAMETER CONDENSATE PIPING FOR HVAC EQUIPMENT 5 TONS AND BELOW
      - A. 1" DIAMETER CONDENSATE PIPING UP TO 20 TONS OF CONNECTED COOLING CAPACITY
    - B. REFRIGERANT PIPING:
      - B.1. PIPE MATERIAL: HARD-DRAWN (TEMPERED) COPPER TUBE, TYPE L ARC.
      - B.2. PIPE JOINT: BRAZED. BRAZING MATERIAL SHALL BE SILFOS 15.
  2. INSULATION
    - A. CONDENSATE PIPING INSULATION SHALL BE 1/2" THICK FIBERGLASS INSULATION AND ALL SERVICE JACKET.
    - B. SUCTION REFRIGERANT LINES ON CONVENTIONAL SPLIT SYSTEMS SHALL BE INSULATED. LIQUID AND SUCTION REFRIGERANT LINES ON VRF SYSTEMS (OR WHERE REQUIRED BY MANUFACTURER) SHALL BE INSULATED. INSULATION SHALL BE CLOSED CELL ELASTOMERIC BY ARMACELL, WHERE LOCATED OUTDOORS THE INSULATION SHALL BE UV RESISTANT.
    - C. INSULATION SHALL BE OWENS CORNING, CERTAIN-TED OR MANVILLE.
    - D. INSULATION, JACKETS AND ADHESIVES SHALL BE FLAME RETARDANT AND SHALL HAVE ASTM E-84 FIRE HAZARD RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED, AND 50 FUEL CONTRIBUTED.
    - E. HANGERS, ANCHORS, CLAMPS AND INSERTS
      - A. PROVIDE CAST BRASS SPLIT RING HINGE HANGERS. SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PIPE LINES. PREVENT VIBRATIONS. SECURE PIPING IN PLACE. SECURE HANGERS TO INSERTS WHERE PRACTICAL. HANGER RODS SHALL HAVE MACHINES THREADS.
    - F. HANGER RODS SHALL BE CONNECTED TO BEAM CLAMP, UL APPROVE CONCRETE INSERTS SHALL BE PHILLIPS OR APPROVED EQUAL. EXPANSION SHIELD, RAMSET OR POWER DRIVEN INSERTS WILL NOT BE ALLOWED.
  4. SLEEVES AND PENETRATIONS
    - A. PIPE SLEEVES THROUGH FIRE RATED CONSTRUCTION SHALL BE SCHEDULE 40 STEEL. SLEEVES THROUGH PARTITIONS AND NON FIRE RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCAL CONSTITUTIONAL SEAMS.
    - B. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE DQJUM SILICATE FOAM. CERAMIC FIBER WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN ONE INCH OF BOTH WALL SURFACE FINISH OR SILICONE CAULKING.
  5. CLEANING
    - A. CLEAN SYSTEMS THOROUGHLY BEFORE TESTING. FIXTURES, EQUIPMENT, PIPE, VALVES, AND FITTINGS SHALL BE FREE OF GREASE, METAL CUTTINGS, DIRT, AND OTHER FOREIGN MATERIAL.
  6. METHODS
    - A. REFRIGERANT PIPING: ALL PIPING SHALL E SUPPORTED WITH CUSH A CLAMPS AND STRUT AS MANUFACTURED BY B-LINE, INC. OR APPROVED EQUAL. ALL REFRIGERANT PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE REFRIGERATION EQUIPMENT MANUFACTURER AND SHALL INCLUDE, BUT NOT BE LIMITED TO, FLEXIBLE CONNECTIONS, VALVES, RELIEF VALVES, EXPANSION VALVES, SOLENOID VALVES, FILTER DRIERS, PIPE INSULATION, FLASHING AND SLEEVES THROUGH WALLS. PROPER SUPPORT OF REFRIGERANT PIPING, AND FULL REFRIGERANT CHARGE. ALL PIPING JOINTS SHALL BE BRAZED WITH SILFOS 15 FILLER METAL AND THE PIPING CHARGED WITH DRY NITROGEN WHILE CONSTRUCTING THE JOINTS. PITCH REFRIGERATION PIPING IN DIRECTION OF OIL RETURN TO COMPRESSOR. PROVIDE TRAPS IN SUCTON LINE RISERS WHERE REQUIRED. TRAPS SHALL BE FABRICATED FROM SHORT RADIIUS STREET ELLS. ALL OTHER ELLS SHALL BE LONG RADIIUS TYPE. SOLENOID VALVES SHALL BE INSTALLED WITH STEMS POINTING UP. AFTER THE REFRIGERANT PIPING HAS BEEN COMPLETED, THE SYSTEM SHALL BE PRESSURE TESTED AT 300 PSIG (HIGH SIDE) AND 150 PSIG (LOW SIDE). THIS PRESSURE SHALL BE MAINTAINED ON THE SYSTEM FOR 12 CONSECUTIVE HOURS WITH NO APPRECIABLE PRESSURE CHANGE. WHILE THE PRESSURE IS APPLIED, THE SYSTEM SHALL BE CHECKED FOR LEAKS. THE SYSTEM SHALL THEN BE EVACUATED TO A MINIMUM VACUUM EQUIVALENT OF 500 MICRONS AND MAINTAINED FOR 12 HOURS. RELEASE VACUUM WITH NITROGEN AND EVACUATE AGAIN. AFTER EVACUATION, THE SYSTEM SHALL BE CHARGED WITH REFRIGERANT IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURER.




























MUNICIPALITY	NETHER PROVIDENCE TOWNSHIP, PA
USE AND OCC. CLASSIFICATION	S-1 - MODERATE-HAZARD STORAGE
APPLICABLE CODES	BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE MECHANICAL CODE: 2018 INTERNATIONAL MECHANICAL CODE PLUMBING CODE: 2018 INTERNATIONAL PLUMBING CODE FUEL GAS CODE: 2018 INTERNATIONAL FUEL GAS CODE ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (BY REFERENCE) FIRE CODE: 2018 INTERNATIONAL FIRE CODE ENERGY CODE: 2018 INTERNATIONAL ENERGY CONSERVATION CODE/ASHRAE 90.1-2016

- HVAC DEMOLITION NOTES- PERTAINS TO EXISTING GARAGE PORTION BEING DEMOLISHED**
1. PROJECT CONDITIONS
    - A.1. THE CONTRACTOR SHALL COMPLETELY FAMILIARIZE HIMSELF WITH ALL EXISTING BUILDING AND SITE CONDITIONS AND LIMITATIONS WHICH MAY HAVE A BEARING ON THE OPERATIONS HEREIN SPECIFIED, AND SHALL INCLUDE ALL WORK REQUIRED TO COMPLETE THE PROJECT AS SHOWN ON THE DRAWINGS. NO EXTRA COMPENSATION WILL BE ALLOWED FOR UNFORESEEN CONDITIONS THAT CAN BE DETERMINED FROM A CAREFUL EXAMINATION OF THE SITE, BUILDING AND DRAWINGS.
    - A.2. ITEMS OF VALUE WHICH ARE NOT INDICATED TO BE RETURNED TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR. STORAGE OR SALE OF ITEMS ON THE PROJECT SITE IS PROHIBITED.
    - A.3. PROTECTION: ENSURE THE SAFE PASSAGE OF PERSONS IN AND AROUND THE BUILDING DURING DEMOLITION. PREVENT INJURY TO PERSONS AND DAMAGE TO PROPERTY. PROVIDE ADEQUATE SHORING AND BRACING TO PREVENT COLLAPSE. IMMEDIATELY REPAIR DAMAGED PROPERTY TO THE CONDITION BEFORE BEING DAMAGED. TAKE EFFECTIVE MEASURES TO PREVENT WIND-BLOWN DUST.
    - A.4. UTILITIES: MAINTAIN ALL UTILITIES EXCEPT THOSE REQUIRING REMOVAL OR RELOCATION. KEEP UTILITIES IN SERVICE AND PROTECT FROM DAMAGE. DO NOT INTERRUPT UTILITIES SERVING USED AREAS WITHOUT FIRST OBTAINING PERMISSION FROM OWNER.
  2. REGULATION REQUIREMENTS
    - A.1. STRICTLY COMPLY WITH APPLICABLE CODES, REGULATIONS AND REQUIREMENTS OR AUTHORITY HAVING JURISDICTION.
  3. HANDLING OF MATERIALS
    - A.1. REMOVE DEBRIS FROM THE SITE AS IT ACCUMULATES. DO NOT STORE, SELL, BURN, OR OTHERWISE DISPOSE OF DEBRIS ON SITE. REMOVE ALL MATERIAL IN SUCH MANNER AS TO PREVENT SPILLAGE.
  4. TRANSFER OF RESPONSIBILITY AND DISPOSITION OF MATERIALS
    - A.1. UPON RECEIPT OF NOTICE TO PROCEED WITH THE WORK, THE TITLE TO ALL MATERIALS FOR DEMOLITION SHALL BE VESTED. THE CONTRACTOR WHEREUPON THE OWNER WILL NOT BE RESPONSIBLE FOR THE CONDITION, LOSS, OR DAMAGE TO SAID PROPERTY. ALL SUCH ITEMS SHALL BE REMOVED FROM THE OWNERS PROPERTY.
  5. DISPOSAL OF DEMOLISHED MATERIALS
    - A.1. REMOVE UNUSED FIXTURES AND ALL PIPING/ DUCTWORK SERVING EQUIPMENT INCLUDING ABANDONED PIPING/ DUCTWORK NOT ASSOCIATED WITH SAID EQUIPMENT. REMOVE PIPING/ DUCTWORK BACK TO THE NEXT LIVE BRANCH WHICH WILL NOT OBSTRUCT THE NEW WORK AND CAP ARTIFICIALLY. TRANSPORT AND LEGALLY DISPOSE OF MATERIALS OFF SITE.
    - A.2. ANY DEMOLITION SHALL BE COORDINATED WITH OWNER, ENGINEER, AND GENERAL CONTRACTOR. ALL DEBRIS SHALL BE CLEANED UP AND REMOVED FROM THE SITE BY THE END OF EVERY WORK DAY. PRIOR TO DISPOSAL OF EQUIPMENT AND MATERIALS, TURN OVER TO OWNER ANY REMOVED EQUIPMENT AND MATERIALS PER OWNERS REQUEST.
  6. CLEAN UP AND REPAIR
    - A.1. UPON COMPLETION OF DEMOLITION WORK, REMOVAL TOOLS, EQUIPMENT AND DEMOLISHED MATERIALS FROM SITE. REMOVE PROTECTION AND LEAVE INTERIOR AREAS BROOM CLEAN.
    - A.2. REPAIR DEMOLITION PERFORMED IN EXCESS OF THAT REQUIRED. RETURN STRUCTURES AND SURFACES TO REMAIN IN CONDITION EXISTING PRIOR TO COMMENCEMENT OF SELECTIVE DEMOLITION WORK. REPAIR ADJACENT CONSTRUCTION OR SURFACES SOILED OR DAMAGED BY SELECTIVE DEMOLITION WORK.



- WIRING SCOPE**
1. THE ELECTRICAL CONTRACTOR SHALL WIRE UP TO LOW VOLTAGE TRANSFORMERS CONTROLLING HVAC EQUIPMENT.
  2. THE MECHANICAL CONTRACTOR'S CONTROLS CONTRACTOR SHALL WIRE FROM THE LOW VOLTAGE TRANSFORMER TO THE HVAC EQUIPMENT.

GENERAL ABBREVIATIONS			
AC	AIR CONDITIONING	HPS	HEAT PUMP LOOP SUPPLY
ACV	AUTOMATIC CONTROL VALVE	HPR	HEAT PUMP LOOP RETURN
AD	ACCESS DOOR	HR	HOUR
ADD'L	ADDITIONAL	HWR	HOT WATER RETURN
AFF	ABOVE FINISHED FLOOR	HWS	HOT WATER SUPPLY
AHU	AIR HANDLING UNIT	HZ	HERTZ
AP	ACCESS PANEL	IN	INCHES
ARCH	ARCHITECT	KW	KILOWATT
BHP	BRAKE HORSEPOWER	LAT	LEAVING AIR TEMPERATURE
BOD	BOTTOM OF DUCT	LPR	LOW PRESSURE COND. RETURN
BOP	BOTTOM OF PIPE	LPS	LOW PRESSURE STEAM
CD	CEILING DIFFUSER /OR/ CONDENSATE	LWT	LEAVING WATER TEMPERATURE
CFM	CUBIC FEET PER MINUTE	MAX	MAXIMUM
CL	CENTERLINE	MECH	MECHANICAL
CLG	CEILING	MDE	MODE EXCHANGER
COL	COLUMN	MFR	MANUFACTURER
CO	COLUMN	MOD	MOTOR OPERATED DAMPER
CONN	CONNECTION	MIN	MINIMUM
CONTR	CONTRACTOR	MTD	MOUNTED
CW	COLD WATER	MAV	MANUAL AIR VENT
CHWS	CHILLED WATER SUPPLY	N/A	NOT APPLICABLE
CHWR	CHILLED WATER RETURN	NC	NORMALLY CLOSED
CWS	CONDENSER WATER SUPPLY	NC	NOT IN CONTRACT
CWR	CONDENSER WATER RETURN	NO	NUMBER
DB	DRY BULB TEMPERATURE	NTS	NOT TO SCALE
DDC	DIRECT DIGITAL CONTROL	OA	OUTSIDE AIR
DIA	DIAMETER	OD	OUTSIDE DIAMETER
DIFF	DIFFUSER	PD	PRESSURE DROP
DIM	DIMENSION	PLBG	FIRE PROTECTION
DN	DOWN	PSIA	POUNDS PER SQ. INCH ABSOLUTE
DX	DIRECT EXPANSION	PSIG	POUNDS PER SQ. INCH GAUGE
DL	DOOR LOUVER	(R)	REMOVE
(E)	EXISTING	REG	REGISTER
EA	EACH	RET	RETURN
EAT	ENTERING AIR TEMPERATURE	REQD	REQUIRED
EFF	EFFICIENCY	RG	RETURN GRILLE
EGG	EXHAUST GRILLE	RH	RELATIVE HUMIDITY
ELEC	ELECTRICAL	(RL)	RELOCATE
ER	EXHAUST REGISTER	RM	ROOM
ESP	EXTERNAL STATIC PRESSURE	RP	REVOLUTIONS PER MINUTE
EWT	ENTERING WATER TEMPERATURE	SA	SOUND ATTENUATOR
EXH	EXHAUST	SCH	SCHEDULE
EXP	EXPANSION	SCR	SCREEN
(F)	FUTURE	SD	SMOKE DAMPER
FA	FREE AREA	SF	SQUARE FOOT
FD	FIRE DAMPER (W/ ACCESS DOOR)	SFCS	SPECIFICATIONS
FLEX	FLEXIBLE	SR	SUPPLY REGISTER
FLDR	FLOOR DRAIN	ST	STEAM TRAP
FPM	FEET PER MINUTE	STL	STEEL
FSD	COMBINATION FIRE/SMOKE DAMPER	STM	STEAM
FT	FEET	SUP	SUPPLY
FURN	FURNISHED	TEMP	TEMPERATURE
GA	GAUGE	TG	TRANSFER GRILLE
GAL	GALLONS	TR	TRANSFER
GALV	GALVANIZED	TYP	TYPICAL
GC	GENERAL CONTRACTOR	UC	UNDERCUT DOOR
GPM	GALLONS PER MINUTE	V	VENT
GR	GRILLE	VD	VOLUME DAMPER
GR	RETURN GRILLE	VFD	VARIABLE FREQUENCY DRIVE
HB	HOSE BIBB CONN W/ CHAINED CAP	W	WIDTH
HD	HAND DAMPER	W/	WITH
HGT	HEIGHT	WB	WET BULB TEMPERATURE
HP	HORSEPOWER	WG	WATER GAUGE
		WVMS	WELD-WIRE MESH SCREEN (1/4")
		W/O	WITHOUT
		Ø	DIAMETER

CALL OUT SYMBOLS	HVAC LEGEND	
 REVISION NUMBER/INDICATES A REVISED FEATURE	 MOD/20	MOTOR OPERATED DAMPER/ ZONE DAMPER
 TEMPERATURE SENSOR OR THERMOSTAT	 HD	HAND DAMPER
 VARIABLE SPEED FAN SWITCH	 FSD	COMBINATION FIRE SMOKE DAMPER
 CEILING CASSETTE	 FD	SELF-CLOSING FIRE DAMPER W/ ACCESS DOOR
 HEAT PUMP- OUTDOOR CONDENSER	 SD	SMOKE DAMPER WITH ACCESS DOOR
 ELECTRIC HEATER		BLANKED FOR 3-WAY BLOW SUPPLY DIFFUSER
 EXHAUST FAN		BLANKED FOR 2-WAY BLOW SUPPLY DIFFUSER
 GAS FIRED RADIANT HEATER		1-WAY BLOW SUPPLY DIFFUSER
	 UC 1	UNDERCUT DOOR
	 LVR	LOUVERED DOOR
		RETURN OR EXHAUST AIR FLOW
		SUPPLY AIR FLOW
		EXHAUST FAN
		NEW CONNECTION TO EXISTING
		TERMINATION OF DEMOLITION
		CARBON MONOXIDE SENSOR
		SMOKE DETECTOR ON AC UNITS
		BUTTERFLY VALVE
		BALL VALVE

NETHER PUBLIC WORK GARAGE DRAWING INDEX			
DRAWING NO.	DRAWING TITLE	ISSUE	
		ISSUED FOR PERMIT 1/10/2022	ISSUED FOR BID 02/20/23
M-1	MECHANICAL LEGEND, NOTES & ABBR.	●	●
M-1.1	MECHANICAL SCHEDULES & DETAILS	●	●
M-2	MECHANICAL FLOOR PLAN	●	●
M-3	MECHANICAL SEQUENCE OF OPERATIONS	●	●
M-4	MECHANICAL SPECIFICATIONS	●	●
M-5	MECHANICAL SPECIFICATIONS	●	●

Linne Engineering Inc.  
1400 N. PROVIDENCE ROAD  
MEDIA, PENNSYLVANIA 19063  
TEL: 610-566-7044  
FAX: 610-566-3258

Project No. 22048

MECHANICAL LEGEND, NOTES & ABBR.

PUBLIC WORKS GARAGE

NETHER PROVIDENCE TOWNSHIP

5 BROOKHAVEN ROAD  
WALLINGFORD, PA. 19086

DATE: 03/29/23

SCALE: AS NOTED

DRAWN BY: AC

CHECKED BY: DWF

PROJ. NO.: 22048

REVISIONS

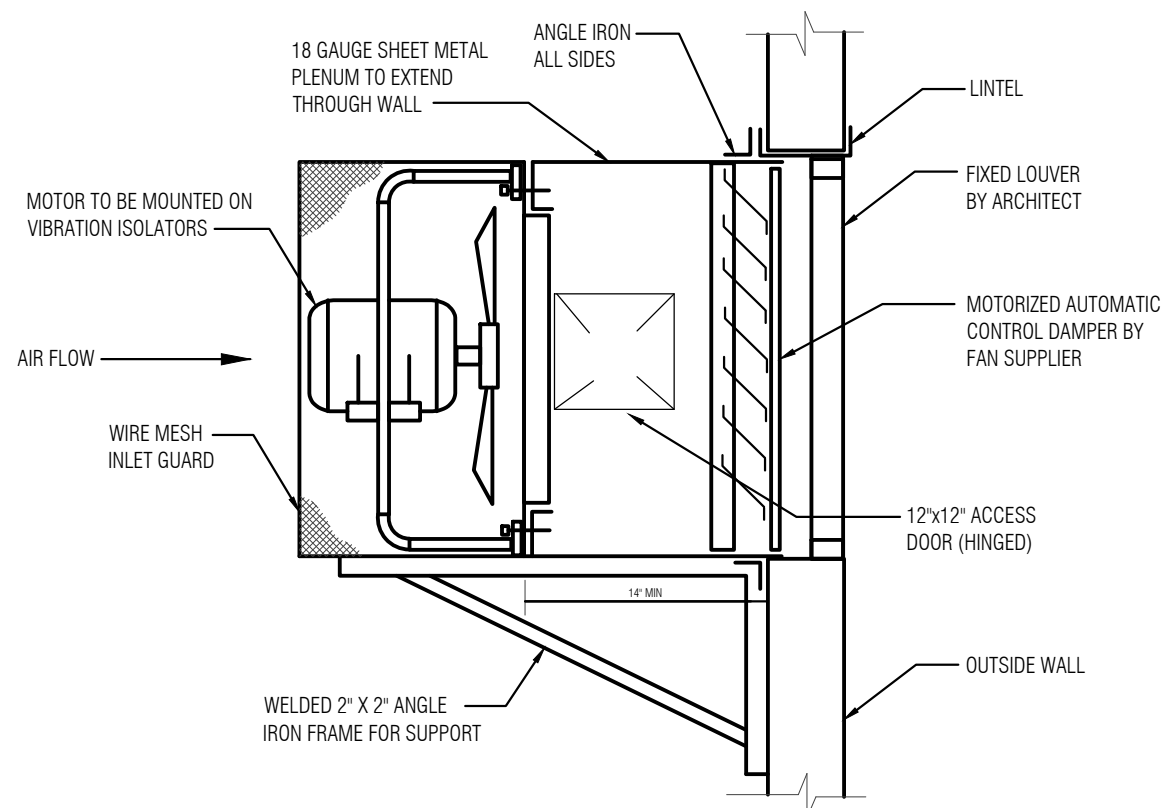
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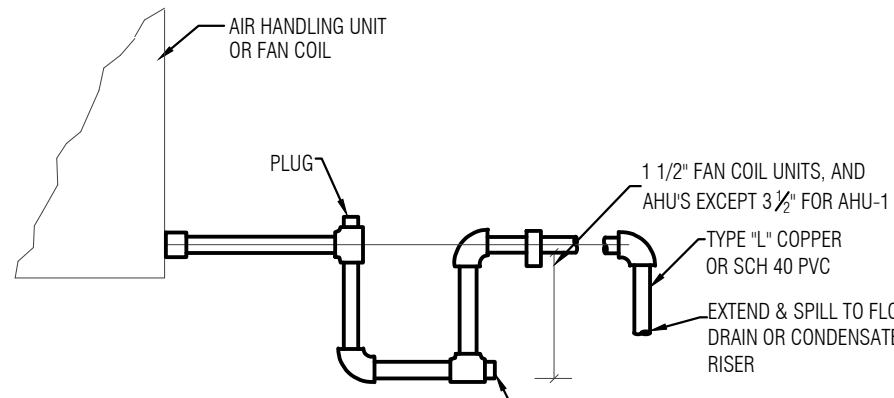
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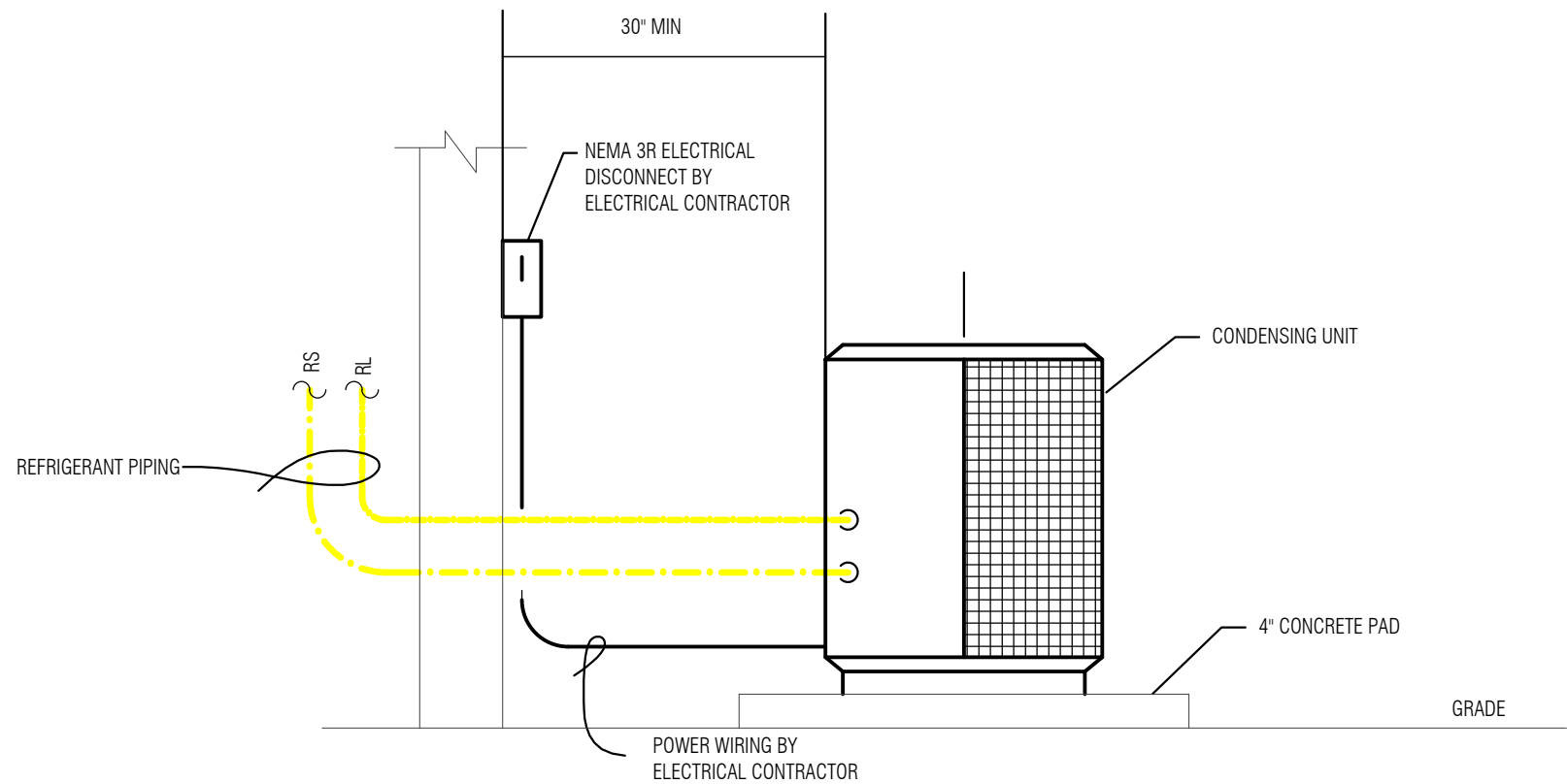
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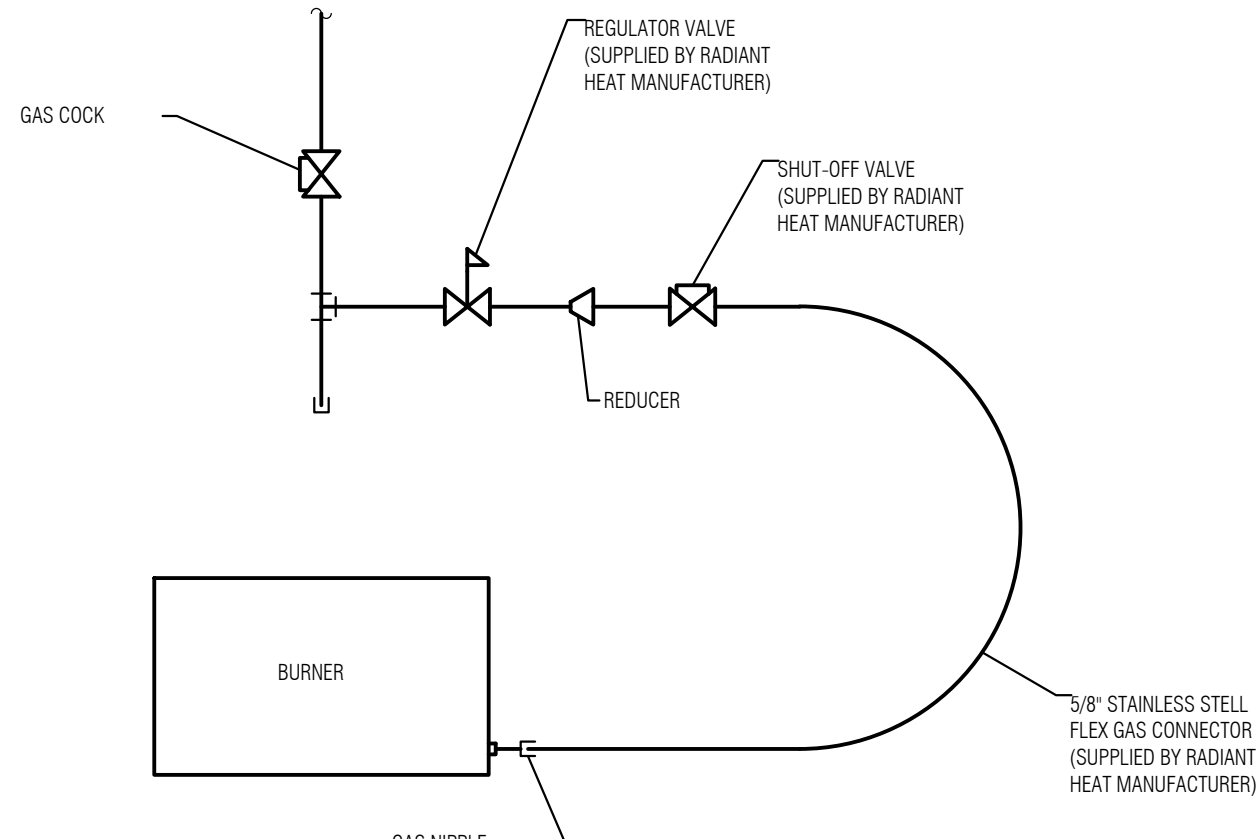
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NO SCALE



CONDENSING UNIT ON GRADE DETAIL  
NO SCALE



RADIANT HEAT BURNER DETAIL  
NO SCALE

DUCTLESS SPLIT-SYSTEM HEAT PUMP UNIT SCHEDULE

UNIT NO.	AREA SERVED	TYPE	NOMINAL TONS	SUPPLY CFM- DRY COIL	COOLING ①			HEATING ②		ELECTRICAL CHARACTERISTICS						WEIGHT (LBS.)		STANDARD OF DESIGN			REMARKS	
					TOTAL BTUH	SENS. BTUH	SEER	BTUH	COP	MCA	MOCP	VOLTS/PHASE/HZ	COMP. LRA	COMP. RATED LOAD AMPS	COND. FAN FLA	EVAP. FAN FLA	AC	CU	MFGFR.	MODEL		
																				AC		HP
CC-1/HP-1	OFFICE & BATHROOM	CASSETTE	1.0	420-480-490-530	12,000	9,000	27.0	12,200	2.98	11	28	230V / 1Ø / 60HZ	12.0	7	0.5	0.26	46	93	TRANE	TPLA0A0121EA708	TRUZA0121KA701N/BJA	③④⑤⑥

① BASED ON 80 DEG. F DB/67 DEG. F WB RETURN AIR CONDITIONS, 95 DEG. F OUTDOOR.

② BASED ON 70 DEG. F INDOOR, 17 DEG. F OUTDOOR.

③ PROVIDE DISCONNECT SWITCH, LOW AMBIENT CONTROL, WIND BAFFLE-FRONT, REAR-SIDE, HAIL GUARDS, CONDENSATE DRAIN PAN, BLUE DIAMOND-ADVANCED MINI CONDENSATE PUMP W/ RESERVOIR & SENSOR, SIMPLE MA REMOTE CONTROLLER MODEL TAC-YT53CRAU-J, GRILLE W/ SD I-SEE SENSOR, ARCHITECTURAL SURROUND FOR CEILING RECESSED UNIT, OA AND BRANCH DUCT CONNECTIONS, CM SHALL PROVIDE 4" CONCRETE PAD FOR GRADE MOUNTING OF CONDENSING UNIT.

④ REFRIGERANT PIPING SHALL BE SIZED & ROUTED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

⑤ THE INDOOR UNIT IS POWERED THRU THE OUTDOOR UNIT.

⑥ EQUAL BY DAIKIN, L.G..

GAS FIRED RADIANT HEATER SCHEDULE

UNIT NO.	GAS INPUT MBH	TYPE	ELECTRICAL CHARACTERISTICS	GAS HEAT			IGNITION CURRENT AMPS	RUN AMPS	STRAIGHT LENGTH	WT LBS	STANDARD OF DESIGN		REMARKS
				HIGH FIRE MBH	LOW FIRE MBH	MIN/MAX OPER. PRESSURE (IN. W.C.)					MFGR.	MODEL	
RH-1	GARAGE BAY	2-STAGE LOW INTENSITY GAS FIRED INFRARED TUBE HEATER	120 V - 1Ø - 60 Hz	100	65	5/14	4.8	1.1	31'-5"	160	RE-VERBER-RAY	HL3-30-100	① ②
RH-2	GARAGE BAY	2-STAGE LOW INTENSITY GAS FIRED INFRARED TUBE HEATER	120 V - 1Ø - 60 Hz	100	65	5/14	4.8	1.1	31'-5"	160	RE-VERBER-RAY	HL3-30-100	① ②

① PROVIDE DISCONNECT SWITCH, 4" SIDEWALL VENT KIT, 4" SIDEWALL COMBUSTION AIR INTAKE CAP, STAINLESS STEEL MOUNTING ANGLE (45 DEG), REFLECTOR, STAINLESS STEEL HANGING CHAIN SET PROVIDE ALL ASSOCIATED ACCESSORIES FOR A COMPLETE OPERATING SYSTEM.

② THERMOSTAT CONTROL SHALL BE TWO STAGE OPERATING ON 24-VOLTS

AIR DEVICE SCHEDULE

SYMBOL	TYPE	SIZE	SERVICE	MOUNTING	MATERIAL	FINISH	ACCESSORIES	MAX. NC	STANDARD OF DESIGN		REMARKS
									MFGR.	MODEL	
CD	SQUARE CONE DIFFUSER	REFER TO PLAN	SUPPLY	REFER TO PLAN	STEEL	WHITE	QBD	25	PRICE	AMD	SQUARE TO ROUND ADAPTER AS REQUIRED.
LOUVER	LOUVER	REFER TO PLAN	INTAKE/EXHAUST	SURFACE	ALUMINIUM	CUSTOM SELECTED BY ARCHITECT	BIRDSCREEN	---	GREENHECK	ESD-435	-

EXHAUST FAN SCHEDULE

UNIT NO.	DUTY	TYPE	CFM	ESP	HP/ WATTS	RPM	FLA	ELECTRICAL CHARACTERISTICS	WEIGHT	CONTROL	STANDARD OF DESIGN		REMARKS
											MFGR.	MODEL	
EF-1	BATHROOM	CABINET	90	0.30	15 W	971	1.5	120 V - 1Ø - 60 Hz	24	LIGHT SWITCH	GREENHECK	SP-A390-VG	①
EF-2	MECH. RM.	CABINET	100	0.30	16 W	967	1.5	120 V - 1Ø - 60 Hz	24	THERMOSTAT	GREENHECK	SP-A390-VG	①
EF-3	GARAGE MIN. EXHAUST	CABINET	200	0.46	46 WATTS	1053	3.5	120 V - 1Ø - 60 Hz	32	CONTINUOUS	GREENHECK	SP-A710-VG	①
EF-4	GARAGE MAX. EXHAUST	SIDEWALL DIRECT	2300	0.2	1/4	1200	3.8	120 V - 1Ø - 60 Hz	63	CONTROL SENSORS CONTROL PANEL	GREENHECK	AER-24-03-0305-VG	②

① PROVIDE DISCONNECT SWITCH, VIBRATION ISOLATORS, HANGERS, BACKDRAFT DAMPER, SPEED CONTROLLER, FACTORY MOUNTED AND FLEXIBLE DUCT CONNECTION.

② PROVIDE DISCONNECT SWITCH, SPEED CONTROLLER- FACTORY MOUNTED, WALL COLLAR, FAN GUARD, 45 DEGREE WEATHER HOOD.

MECHANICAL SCHEDULES & DETAILS

PUBLIC WORKS GARAGE

NETHER PROVIDENCE TOWNSHIP

5 BROOKHAVEN ROAD

WALLINGFORD, PA. 19086

DATE:	REVISIONS	NO.		DESCRIPTION	DATE
		1	ISSUED FOR BID		
03.29.23	SCALE:	AS NOTED	03/29/23		
	DRAWN BY:	AC			
	CHECKED BY:	DWF			
	PROJ. NO.:	22048			
SHEET NO. 6					
M-1.1					
SHEET 2 OF 6					

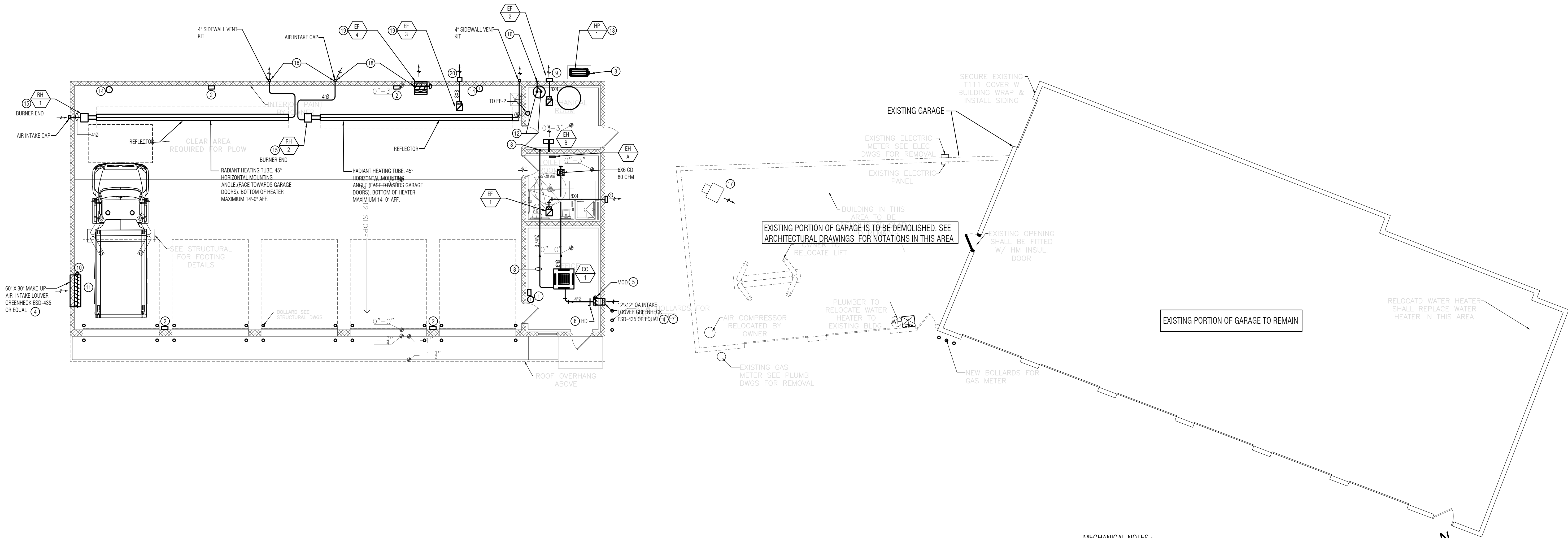
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Project No. 22048



1 MECHANICAL FLOOR PLAN  
M2.0 SCALE - 1/8" = 1'-0"

BRANCH/ FLEX DUCT SIZING SCHEDULE		
DUCT SIZE	CFM RANGE	REMARK
6"Ø	0-100	MAX 10' LENGTH.

- GENERAL MECHANICAL CONSTRUCTION NOTES
- IN INACCESSIBLE CEILINGS PROVIDE INTEGRAL OPPOSED BLADE DAMPERS AT ALL AIR DEVICES. FINAL SUPPLY AIR DEVICE BALANCING SHALL BE PERFORMED VIA INTEGRAL AIR DEVICE. IN ACCESSIBLE CEILINGS PROVIDE HAND DAMPERS AT BRANCH DUCTS OFF OF MAINS FOR BALANCING. FLEX DUCT WORK LENGTHS SHALL BE LIMITED TO WHAT IS ALL INDICATED ON COVER SHEET DRAWING.
  - ALL DIFFUSERS AND REGISTERS LOCATED IN TOILET ROOMS SHALL BE ALUMINUM CONSTRUCTION.
  - ALL RETURN/EXHAUST REGISTERS SHALL HAVE 45° FIXED BLADES.
  - ALL DUCT SIZES ARE INSIDE DUCT DIMENSIONS.
  - REFER TO ARCHITECTURAL ELEVATIONS FOR EXTERIOR TERMINATION LOCATIONS.

- MECHANICAL NOTES :
- TOXALERT MODEL TOX-EC-CON2 TRANSMITTER CONTROL PANEL. POWER- 120-1-60 VOLTAGE, 20 AMP BREAKER. PANEL CONTROLS EXHAUST FAN EF-4.
  - TOXALERT MODEL TOX-EC-CO/NO2 TRANSMITTER MODULE COMBINATION CARBON MONOXIDE (CO) AND NITROGEN DIOXIDE (NO2) SENSOR. INPUT POWER- 24 VOLT, 1.2 WATTS. CONTROL REQUIRED. WIRED BY CONTROLS CONTRACTOR. TRANSMITTER LOCATIONS MAXIMIZES COVERAGE IN GARAGE.
  - 4" H CONCRETE HOUSEKEEPING PAD FOR CONDENSING UNIT.
  - INSTALL LOUVER HIGH IN WALL TIGHT TO UNDERSIDE OF ROOF TRUSSES HORIZONTAL DRYWALL ( APPROX. 16'-0" AFF).
  - INTERLOCK MOD W/ AC-1 OPERATION. SEE SEQUENCE OF OPERATIONS DWG. M-3.
  - BALANCE HD TO 30 CFM OF OA
  - PROVIDE 12" D FULL SIZE PLENUM BEHIND LOUVER.
  - 3/4" CONDENSATE DRAIN TO INDIRECT WASTE IN MECHANICAL ROOM.
  - HOODED WALL CAP- GREENHECK MODEL WC-10X3
  - INTERLOCK MOD W/ EF-4 OPERATION. SEE SEQUENCE OF OPERATIONS DWG. M-3.
  - PROVIDE WMS OVER OPEN DUCT END
  - VENT EXHAUST & INTAKE COMBUSTION AIR TO DOMESTIC WH. SIZE EXHAUST & VENT PIPING PER DOMESTIC WH. MANUFACTURER'S INSTALLATION MANUAL.
  - SIZE AND ROUTE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
  - RADIANT HEATER CONTROL STAT.COORDINATE LOCATION WITH OWNER PRIOR TO ROUGH-IN.
  - INSTALL RADIANT HEATER PER MANUFACTURER'S INSTALLATION MANUAL.
  - PROVIDE CONCENTRIC VENT, SIZE & ROUTE EXHAUST VENT & COMBUSTION AIR PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  - REMOVE AND RELOCATE EXISTING GAS-FIRED UNIT AND ASSOCIATED CONTROLS. RELOCATE HEATER TO EXISTING TO REMAIN PORTION OF GARAGE. COORDINATE LOCATION WITH OWNER.
  - MAINTAIN CODE REQUIRED CLEARANCES BETWEEN INTAKE AND EXHAUST OUTLETS.
  - MOUNT EXHAUST FAN AS HIGH AS POSSIBLE, TIGHT TO UNDERSIDE OF CEILING.
  - HOODED WALL CAP - GREENHECK MODEL 8X8.

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MECHANICAL FLOOR PLAN

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DATE: 03/29/23

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

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REVISIONS

NO. 1

DESCRIPTION

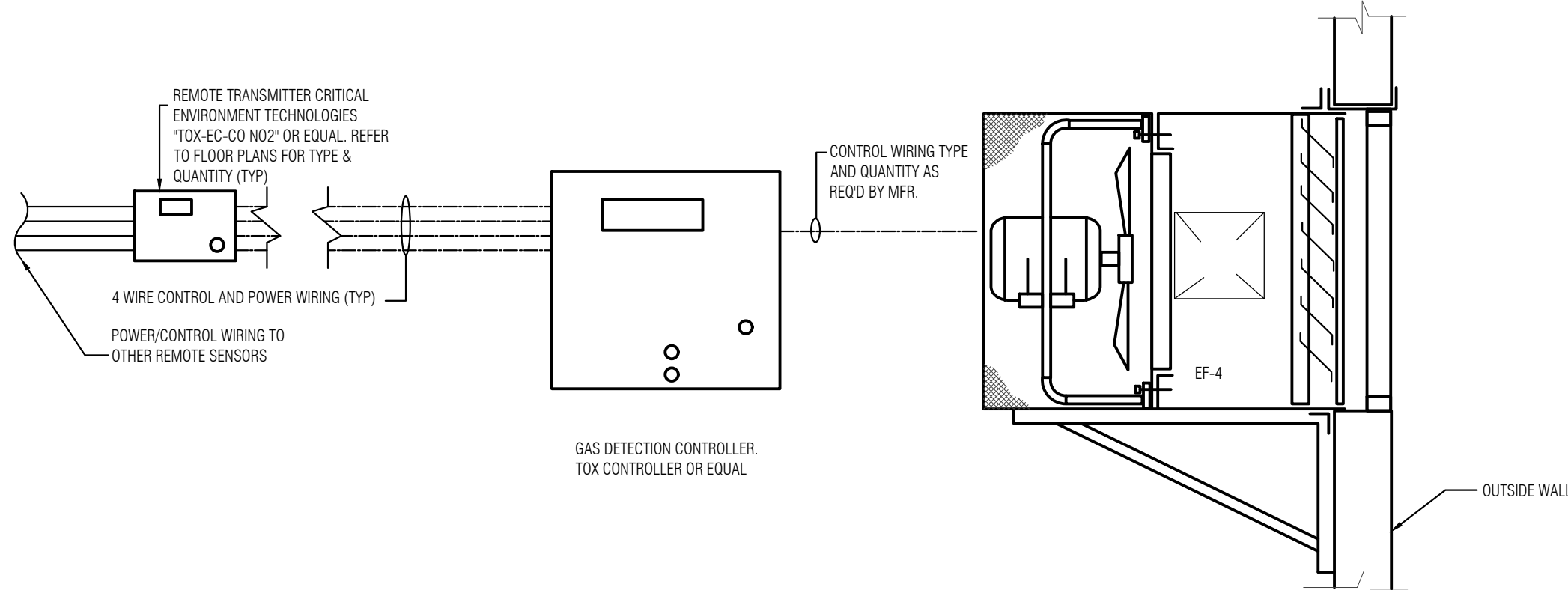
DATE

03/29/23

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SHEET NO. 3 OF 6

M-2



GARAGE EXHAUST CONTROL DIAGRAM

NO SCALE


SEQUENCE OF OPERATIONS:

1. SENSOR ALARM SETPOINTS SHALL BE SET IN GAS DETECTION CONTROLLER: CO = 25 PPM, NO2=0.7 PPM.
2. EF-3 SHALL RUN CONTINUOUSLY VENTILATING GARAGE AREA.
3. WHEN REMOTE TRANSMITTER DETECTS GAS CONCENTRATION LEVELS ABOVE SET POINTS A SIGNAL SHALL BE SENT FROM THE GAS DETECTION CONTROLLER TO ENERGIZE EF-4 AND OPEN MAKE-UP AIR MOD SERVED BY LOUVER.
4. ON A FALL IN GAS CONCENTRATION LEVEL BELOW SETPOINT EF-4 SHALL BE DE-ENERGIZED AND MAKE-UP AIR MOD SHALL CLOSE.

2 STAGE GAS FIRED RADIANT HEATER

SEQUENCE OF OPERATIONS:

1. HEATER SHALL RUN AT LOW HEAT TO MAINTAIN TEMPERATURE SETPOINT (ADJUSTABLE). ON A FALL IN TEMPERATURE BELOW SETPOINT (ADJUSTABLE) THE HEATER SHALL RUN AT HIGH HEAT. ON A RISE IN TEMPERATURE ABOVE SETPOINT (ADJUSTABLE) THE HEATER SHALL REVERT BACK TO LOW HEAT TO MAINTAIN TEMPERATURE SET POINT (ADJUSTABLE).



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MECHANICAL SEQUENCE OF OPERATIONS		
PUBLIC WORKS GARAGE		
NETHER PROVIDENCE TOWNSHIP		
5 BROOKHAVEN ROAD WALLINGFORD, PA. 19086		

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SCALE: AS NOTED

SHEET NO. 6

M-3

SHEET 4 OF 6

1.1 SCOPE

A. WORK SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING:

1. AIR DISTRIBUTION SYSTEMS, INCLUDING DUCTWORK, DIFFUSERS, REGISTERS, GRILLES, DAMPERS, ETC.

2. FANS AND SYSTEMS.

3. FLEXIBLE CONNECTIONS FOR POWERED EQUIPMENT, EXHAUST FANS, AND OTHER VIBRATING AND ROTATING EQUIPMENT.

4. HOISTING AND RIGGING REQUIRED COMPLETING THE WORK OF THIS SECTION.

5. SLEEVES, INSERTS AND HANGERS.

6. MOTORS.

7. SHEET METAL PLENUM WORK.

8. TESTING AND BALANCING.

9. CLEANING.

10. CONTROL SYSTEM.

1.2 CONTRACT DOCUMENTS

A. WORK TO BE PERFORMED UNDER THIS SECTION IS IN CONJUNCTION WITH WORK SHOWN ON THE DRAWINGS.

1.3 RELATED WORK IN OTHER SECTIONS

A. THE FOLLOWING WORK IS NOT INCLUDED IN THIS SECTION AND SHALL BE PERFORMED UNDER OTHER SECTIONS.

1. ELECTRIC POWER WIRING FOR ALL EQUIPMENT

2. FIRE ALARM SYSTEM

3. PLUMBING SYSTEM(S)

4. FIRE PROTECTION

1.4 SUBMITTALS

A. MATERIAL AND EQUIPMENT REQUIRING SHOP DRAWING SUBMITTALS SHALL INCLUDE ALL EQUIPMENT SHOWN ON THE SCHEDULE SHEETS AND SHALL ALSO INCLUDE BUT NOT BE LIMITED TO:

1. DIFFUSERS, REGISTERS, GRILLES, DAMPERS AND ACCESSORIES.

2. SPLIT SYSTEM HEAT PIMP

3. FANS.

4. UNIT HEATERS & GAS FIRED RADIANT HEATERS.

5. COMPLETE DUCTWORK, SHOP DRAWINGS, CONSTRUCTION DETAILS AND CONSTRUCTION STANDARDS.

1.5 NOTICE TO BIDDERS

A. DRAWINGS AND SPECIFICATIONS FORM COMPLIMENTARY REQUIREMENTS; PROVIDE WORK SPECIFIED AND NOT SHOWN, AND WORK SHOWN BUT NOT SPECIFIED AS THOUGH EXPLICITLY REQUIRED BY BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES AND MATERIALS OBVIOUSLY NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.

B. DRAWINGS ARE DIAGRAMMATIC: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL COMPONENTS NECESSARY FOR A COMPLETE INSTALLATION. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. COORDINATE WITH ARCHITECTURAL DRAWINGS AND OTHER TRADES.

C. ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECTS' INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.

D. THE INTENTION IS FOR INSTALLATION OF COMPLETE AND OPERATING SYSTEMS INSTALLED IN ACCORDANCE WITH THE ASSOCIATED MANUFACTURER'S INSTRUCTIONS. NOT EVERY COMPONENT REQUIRED IS SHOWN. THE CONTRACTOR SHALL INCLUDE ALL COMPONENTS NORMALLY ASSOCIATED WITH THE PARTICULAR SYSTEM AND/OR REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE SYSTEM SHALL BE FULLY COMMISSIONED AND SIGNED OFF BY AN OFFICER OF THE RESPECTIVE CONTRACTOR. PRIOR TO FINAL OWNER ACCEPTANCE TESTING, PROVIDE PERSONNEL TO ASSIST IN 24 HOURS OF ACCEPTANCE TESTING.

E. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH THE DESIGN DOCUMENTS.

F. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS LABORATORIES (UL) AND APPROVED BY ASME AND AGA FOR INTENDED SERVICE.

G. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES REQUIRED FOR SAFE EXECUTION AND COMPLETION OF WORK, AND FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.

H. COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS.

I. ALL MATERIALS, EQUIPMENT AND METHOD OF INSTALLATION SHALL BE IN ACCORDANCE WITH THE STANDARDS, REGULATIONS, CODES, ORDINANCES, AND LAW OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION

J. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC, SPRINKLER, PLUMBING, STRUCTURAL AND GENERAL ARCHITECTURE. OFFSETS IN PIPING AND OFFSETS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

K. DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE OR OTHER CAUSE.

L. INTERRUPTIONS TO EXISTING SERVICES AND SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE OWNER. INCLUDE ALL PREMIUM TIME ASSOCIATED WITH INTERRUPTIONS. INTERRUPTIONS SHALL BE SCHEDULED WITH OWNER 48 HOURS IN ADVANCE.

M. CONTRACTOR SHALL COORDINATE ITS RESPECTIVE CEILING MOUNTED EQUIPMENT WITH OTHER TRADE CONTRACTORS PRIOR TO INSTALLATION TO AVOID CONFLICTS.

N. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEAD ROOM AT ALL TIMES. DO NOT RUN PIPES, DUCTS, AND CONDUIT EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS. MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS, SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.

O. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.

P. ALL MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS NOTED OTHERWISE.

Q. MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.

R. SUBSTITUTED PRODUCTS SUBMITTED AND APPROVED FOR USE THAT NECESSITATE CHANGES TO THE SAID CONTRACTORS WORK OR THE WORK OF OTHER TRADES OF CONTRACT SHALL BE COORDINATED AND ARRANGED BY THE CONTRACTOR WHO SUBMITTED THE SUBSTITUTION WITHOUT ADDITIONAL COST TO THE OWNER

S. PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS RECOMMENDATIONS

T. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL APPLICABLE EQUIPMENT WITH THE ELECTRICAL CONTRACTOR.

U. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN TURN OVER ALL OPERATING MANUALS, MAINTENANCE MANUALS, AND "AS BUILT" DRAWINGS TO OWNER AT CONCLUSION OF CONSTRUCTION.

V. RUN PIPING/WIRING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS.

W. ANY REFERENCE TO ELECTRICAL, PLUMBING AND HVAC CONTRACTORS, NOTED ON THESE DRAWINGS OR STATED IN THE SPECIFICATIONS SHALL NOT BE MISCONSTRUED AS AN INTENTION TO DEFINE SEPARATE CONTRACTORS FOR THE RESPECTIVE WORK. THE GENERAL CONTRACTOR SHALL COORDINATE AND PROVIDE A COMPLETE BUILDING WITH COMPLETE MECHANICAL AND ELECTRICAL SYSTEMS, REGARDLESS OF ANY SPECIFICATION REFERENCES TO OTHER CONTRACTORS.

X. GUARANTEE WORK OF THIS CONTRACTOR IN WRITING FOR ONE YEAR FROM THE DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. PROMPTLY, REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATIONS THAT DEVELOP DEFECTS WITHIN THIS PERIOD. PROMPTLY AND TO OWNERS SATISFACTION, CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEED AT NO ADDITIONAL COST TO OWNER. SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERRUPTED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.

PART 2 - PRODUCTS

2.1 DUCTWORK AND AIR DISTRIBUTION EQUIPMENT

A. REFERENCE STANDARDS

STANDARD

SMACNA HVAC DUCT CONSTRUCTION STANDARDS (METAL AND FLEXIBLE)

NFPA 90A

AS APPLICABLE TO

SHEET METAL DUCTWORK; DUCT LINERS; ADHESIVES; FASTENERS; FLEXIBLE DUCTWORK.

FIRE DAMPERS; FIRE RESISTANCE STANDARDS FOR DUCTS AND LINERS

B. GENERAL

1. PRIOR TO COMMENCING THE WORK, SHEET METAL SHOP DRAWINGS MUST BE PREPARED AND SUBMITTED FOR REVIEW AND APPROVAL TO THE ARCHITECT/ENGINEER. SHEET METAL SHOP DRAWINGS SHALL INCLUDE ALL ELEMENTS OF THE EQUIPMENT, DUCTWORK, AIR DEVICES AND REFLECTED CEILING PLANS FOR COORDINATION OF CRITICAL DIMENSIONS OF ARCHITECTURAL/STRUCTURAL COMPONENTS.

2. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

3. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATING.

4. SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. NOTIFY STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT.

5. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES.

6. INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS. CONTRACTOR SHALL INCREASE SIZE FOR LINER IF APPLICABLE.

7. PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTING TO FANS AND AIR HANDLING UNITS.

8. THE INSIDE OF ALL UNLINED DUCTWORK VISIBLE THROUGH A GRILLE SHALL BE PAINTED FLAT BLACK.

9. THOROUGHLY CLEAN ALL NEW DUCTWORK AFTER INSTALLATION.

10. NO DUCTWORK SHALL BE LOCATED ABOVE ELECTRICAL PANELS/GEAR.

11. PROVIDE SUPPORTING AND HANGING DEVICES NECESSARY TO ATTACH ENTIRE HVAC SYSTEM, INCLUDING DUCTWORK AND EQUIPMENT, AND TO PREVENT VIBRATION.

12. PROVIDE VERTICAL AND HORIZONTAL SUPPORTS, AS REQUIRED BY CODES, TO MEET MINIMUM APPLICABLE EARTHQUAKE RESISTANCE STANDARDS.

13. ALL DUCT ROUTING IS DIAGRAMMATIC; CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK WITH OTHER TRADES INCLUDING, BUT NOT LIMITED TO, FIRE PROTECTION, ELECTRICAL, FIRE PROTECTION, AND STRUCTURE. ADJUST DUCT ROUTING (LOCATION, OFFSETS, FITTINGS, ETC.) AND ASPECT RATIO AS NEEDED.

14. DUCTWORK SHALL BE FREE FROM VIBRATION UNDER ALL CONDITIONS OF OPERATION. DIMENSIONS SHOWN ON DRAWINGS FOR LINED DUCTWORK ARE NET INSIDE DIMENSIONS. INCREASE DUCTWORK TO ACCOMMODATE LINING REQUIREMENTS.

15. PIPE OR CONDUIT CROSSING DUCT:

a. NO PIPE, CONDUIT, HANGER, ARCHITECTURAL ELEMENT NOR STRUCTURAL MEMBER SHALL PASS THROUGH DUCT WITHOUT ARCHITECT'S WRITTEN APPROVAL.

b. WHERE IT IS IMPOSSIBLE TO RE-ROUTE PIPE OR CONDUIT AND WHEN WRITTEN APPROVAL HAS BEEN OBTAINED, INCREASE DUCT SIZE TO MAINTAIN CONSTANT CROSS-SECTIONAL AREA AT POINT OF INTERFERENCE. PROVIDE STREAMLINED ENCLOSURE FOR PIPE OR CONDUIT, AS ILLUSTRATED IN SMACNA.

16. WHEN MAKING OFFSETS AND TRANSFORMATIONS NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS, PRESERVE FULL CROSS-SECTIONAL AREA OF DUCTWORK SHOWN ON DRAWINGS.

17. SEALING REQUIREMENTS FOR CLASS B, LEAKAGE CLASS 12, GALVANIZED, AND STEEL DUCTWORK.

a. TRANSVERSE JOINTS

1) DURING ASSEMBLY SEAL ALL FLANGED TRANSVERSE JOINTS WITH SEALING TAPE OF QUALITY EQUAL TO HARDCAST, INC. 1902-FR. CORNERS SHALL BE SEALED AS DESCRIBED BY SMACNA AND WHEN APPLICABLE PER MANUFACTURER'S PUBLISHED PROCEDURES.

2) SEAL ALL NON-FLANGED TRANSVERSE JOINTS WITH HARDCAST, INC., VERSA GRIP 102 OR APPROVED EQUAL.

b. LONGITUDINAL SEAMS

1) SEAL ALL LONGITUDINAL SEAMS DURING DUCTWORK FABRICATION WITH HARDCAST, INC., COLD SEAL 1001, OR APPROVED EQUAL.

18. SUPPORT

a. SPACE HANGERS AS REQUIRED BY SMACNA (8 FT MAX) FOR HORIZONTAL DUCT ON 8 FT. CENTERS, UNLESS CONCENTRATED LOADINGS REQUIRE CLOSER SPACING.

b. SUPPORT VERTICAL DUCT ON EACH FLOOR OR SLAB IT PENETRATES.

c. SUPPORTS FOR DUCTWORK AND EQUIPMENT SHALL BE GALVANIZED UNLESS SPECIFIED OTHERWISE.

19. CONNECTIONS

a. CONNECT INLETS AND OUTLETS OF AIR HANDLING EQUIPMENT TO DUCTWORK WITH FLEXIBLE CONNECTIONS UNLESS FAN HAS VIBRATION ISOLATOR MOUNTS INSIDE UNIT WITH FLEXIBLE CONNECTIONS AND NO EXTERNAL VIBRATION ISOLATORS.

b. INDOORS, FLEXIBLE CONNECTIONS SHALL BE NEOPRENE-COATED FIBROUS GLASS FIRE RETARDANT FABRIC, BY VENTFABRICS OR DURODYNE. OUTDOORS, FLEXIBLE CONNECTIONS SHALL BE DUPONT HYPALONCOATED FIBROUS GLASS FIRE-, WEATHER-, AND UV-RESISTANT BY VENTFABRICS OR DURODYNE WITH INSULATION SANDWICHED IN FABRIC PORTION OF CONNECTOR.

c. SECURE FLEXIBLE CONNECTIONS TIGHTLY TO AIR HANDLERS WITH METAL BANDS. BANDS SHALL BE SAME MATERIAL AS DUCT CONSTRUCTION.

d. CONNECTIONS FROM TRUNK TO BRANCH DUCTS SHALL BE AS DETAILED ON DRAWINGS.

20. PREFABRICATED TRANSVERSE DUCT JOINTS

a. TRANSVERSE JOINTS IN GALVANIZED SHEET METAL DUCTWORK MAY BE MADE WITH GALVANIZED GASKETED FRAME AND ANGLE DUCT JOINT SYSTEM BY DUCTMATE, TDF, TDC OR APPROVED EQUAL. ANGLES SHALL BE AT LEAST 20 GAUGE. PREFABRICATED TRANSVERSE DUCT JOINTS SHALL NOT BE USED FOR DUCT 16 GA. AND HEAVIER, NOR FOR DUCT 23 GA. OR LIGHTER.

b. SECURE ANGLES TO DUCT WITH SCREWS (USING CLUTCHED ARBOR) OR SPOT-WELDS SPACED AS RECOMMENDED BY MANUFACTURER FOR DUCT PRESSURE CLASS.

21. ELBOWS AND BENDS

a. WHERE CENTERLINE RADIUS IS LESS THAN 1.5 TIMES DUCT WIDTH (ON SUPPLY, RETURN AND EXHAUST DUCTWORK), ELBOWS SHALL BE RADIUS THROAT WITH RADIUS HEE, AND FULL-LENGTH SPLITTER VANES WHEN REQUIRED. WHEN CENTERLINE RADIUS  $\geq$  DIVIDED BY THE DUCT WIDTH (W) IS LESS THAN 1.5, PROVIDE THE FOLLOWING NUMBER OF SPLITTER VANES:  $R/W$  BETWEEN 1.49 AND  $0.7 = 1$ ;  $R/W$  BETWEEN  $0.69$  AND  $0.6 = 2$ ;  $R/2$  BETWEEN  $0.59$  AND  $0.55 = 3$ . MINIMUM INSIDE RADIUS (NOT CENTERLINE) SHALL BE 2". INSTALL VANES IN ACCORDANCE WITH SMACNA.

b. FOR ROUND DUCTWORK PROVIDE STAMPED ELBOWS, WITH CENTERLINE RADII EQUAL TO  $1 \frac{1}{2}$  TIMES DUCT DIAMETER.

22. ACCESS PANELS/DOORS

a. ACCESS PANELS SHALL BE PROVIDED TO SERVICE DAMPERS, HEATERS, VALVES AND ALL CONCEALED MECHANICAL EQUIPMENT. PROVIDE PROPER PRESSURE AND LEAKAGE RATED, GASKETED, DUCT MOUNTED ACCESS PANELS/DOORS. GAUGES OF DOOR MATERIALS, NO. OF HINGES, NO. AND TYPE OF DOOR LOCKS SHALL BE AS REQUIRED BY THE SMACNA DUCT CONSTRUCTION STANDARDS. UNHINGED DOORS SHALL BE CHAINED TO FRAME WITH A MINIMUM LENGTH OF 6" TO PREVENT LOSS OF DOOR. FOR SEAL CLASS A, HINGED DOORS ARE NOT ACCEPTABLE. SCREWED OR BOLTED ACCESS PANELS ARE NOT ACCEPTABLE. ACCESS DOORS SHALL BE LEAKAGE RATED, NEOPRENE GASKETED UL 94HF1 LISTED. DUCTMATE "SANDWICH" DOOR METAL SHALL BE THE SAME AS THE ATTACHED DUCT MATERIAL. FOR GREASE AND HIGH TEMPERATURE DUCTS, DOOR ASSEMBLY SHALL BE RATED FOR 2300F. THE MINIMUM SIZES ARE:

1) AUTOMATIC CONTROL DAMPERS - 6" X 6" MINIMUM.

2) SUCTION AND DISCHARGE SIDES OF INLINE FANS - 24" X 24" MINIMUM.

3) AT ADDITIONAL LOCATIONS INDICATED ON DRAWINGS, OR SPECIFIED ELSEWHERE - 12" X 12" MINIMUM.

b. GENERALLY, ACCESS DOORS ARE NOT SHOWN ON THE DRAWINGS, BUT SHALL BE PROVIDED IN ACCORDANCE WITH THE ABOVE.

c. WHERE DUCTWORK/EQUIPMENT ACCESS PANELS/DOORS ARE LOCATED ABOVE INACCESSIBLE CEILINGS, CONTRACTOR IS RESPONSIBLE FOR PROVIDING ACCESS PANELS FOR INSTALLATION BY GENERAL CONTRACTOR. ACCESS PANELS IN RATED ASSEMBLIES SHALL BE ACUDOR FW-5050. ACCESS PANELS IN NON-RATED DRYWALL CEILINGS SHALL BE WIND-LOCK "STEALTH". ACCESS PANELS IN NON-RATED WALLS SHALL BE ADUDOR UF-5000.

23. PLENUMS AND CONNECTIONS TO LOUVERS:

a. SHALL BE 18 GA. MINIMUM CROSS-BROKEN AND PROPERLY REINFORCED WITH GALVANIZED ANGLE IRONS TO SMACNA REQUIREMENTS.

b. SHALL HAVE BOTTOM AND CORNER SEAMS SOLDERED WATERTIGHT AT LEAST 12" UP FROM BOTTOM.

c. SHALL PITCH CONNECTION BACK TOWARDS TO LOUVER. PROVIDE HALF-COUPLING DRAIN CONNECTION AT BOTTOM OF PLENUM UNLESS NOTED OTHERWISE PIPE DRAIN TO NEAREST FLOOR DRAIN.

d. SHALL HAVE UNUSED PORTIONS OF LOUVERS BLOCKED-OFF WITH SHEET METAL; SEALED AIR- AND WATER-TIGHT; INSULATED WITH 2" THICK 6-LB. DENSITY RIGID OR BOARD INSULATION

24. MATERIALS

a. SHEET METAL DUCTS SHALL BE CONSTRUCTED OF HOT-DIPPED GALVANIZED SHEET METAL WITH G90 COMMERCIAL COATING ACCORDING TO ASTM 527, UNLESS SPECIFIED OTHERWISE. ALL EXPOSED DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED ASTM A-591 FOR FIELD PAINTING.

25. FLEXIBLE DUCTWORK

1) FLEXIBLE DUCTWORK, CONNECTING TO UNINSULATED OR UNLINED DUCT, SHALL BE VINYL-COATED FIBERGLASS CLOTH 0.00057" MINIMUM THICKNESS, 25 STRANDS PER INCH MINIMUM THREAD COUNT WITH CORROSION-RESISTANT HELICAL WIRE REINFORCEMENT. FLEX DUCT SHALL BE U.L. RATED FOR 12" W.C. POSITIVE PRESSURE, 2" W.C. NEGATIVE PRESSURE WITH A MAXIMUM VELOCITY OF 4000 FPM. FLEXDUCT MUST BE LISTED AS A CLASS 1 CONNECTOR ACCORDING TO UL 181 AND SHALL MEET THE REQUIREMENTS OF NFPA 90A - MAXIMUM ASTM E-84 FIRE HAZARD RATING SHALL BE 25 FLAME SPREAD, 50 FUEL CONTRIBUTED AND 50 SMOKE DEVELOPED. UNINSULATED FLEXIBLE DUCT SHALL BE EQUIVALENT TO FLEXMASTER TYPE 4.

A. TWO-INCH (2") AND LOWER PRESSURE CLASS DUCTWORK - RECTANGULAR

1. INTERNAL STIFFENING STRUTS SHALL ONLY BE USED UPON PRIOR WRITTEN APPROVAL OF THE ENGINEER.

2. MAKE CHANGES IN DUCT SIZE WITH TAPERED CONNECTIONS, AS REQUIRED BY SMACNA. CHANGES SHALL NOT EXCEED 30 FROM LINE OF AIR FLOW. TAKE-OFF TO THE DIFFUSERS SHALL BE 45 LEADING EDGE TYPE OR BELLMOUTH TYPE.

3. TRANSVERSE JOINTS SHALL BE TDF/TDC OR SLIP JOINTS, USE FLAT OR STANDING SEAM ACCORDING TO SMACNA. WHERE DUCT SIZE REQUIRES STANDING SEAM, BUT SPACE RESTRICTIONS DICTATE FLAT SEAM, NOTIFY ARCHITECT PRIOR TO FABRICATION.

B. TWO-INCH (2") AND LOWER PRESSURE CLASS DUCTWORK - ROUND

A. JOINTS

a. LONGITUDINAL JOINTS SHALL BE SPIRAL SEAM, BUTT WELDED, LAP SEAM WELDED, OR ACME LOCK-GROOVED SEAM. SNAP LOCK SEAMS SHALL BE USED ON  $\frac{1}{2}$ " W.G. PRESSURE CLASS DUCT ONLY.

b. TRANSVERSE JOINTS SHALL BE BEADED SLEEVE JOINT OR OTHER APPROVED JOINTS LISTED IN SMACNA. USE THREE OR MORE SHEET METAL SCREWS AT 15" UNIFORM INTERVALS ALONG CIRCUMFERENCE OF JOINTS.

C. DIFFUSERS, REGISTERS AND GRILLES

1. PROVIDE ALUMINUM REGISTERS AND GRILLES FOR EXHAUST INLETS AND OUTLETS, OF SIZE, TYPE AND DESIGN SHOWN ON DRAWINGS.

2. EQUIPMENT SHALL HANDLE AIR QUANTITIES AT OPERATING VELOCITIES:

a. WITH MAXIMUM DIFFUSION WITHIN SPACE SUPPLIED OR EXHAUSTED.

b. WITHOUT OBJECTIONABLE AIR MOVEMENT AS DETERMINED BY ENGINEER.

3. EXHAUST OUTLETS SHALL HAVE OPPOSED BLADE VOLUME DAMPERS OPERABLE FROM FRONT.

4. SUPPLY REGISTERS SHALL HAVE TWO SETS OF DIRECTIONAL CONTROL BLADES.

5. DIFFUSERS WITHIN SAME ROOM OR AREA SHALL BE OF SAME TYPE AND STYLE TO PROVIDE UNIFORMITY.

6. SURFACE MOUNT DIFFUSERS, REGISTERS AND GRILLES SHALL BE FURNISHED WITH GASKETS AND INSTALLED WITH FACES SET LEVEL AND PLUMB, TIGHTLY AGAINST MOUNTING SURFACE.

7. FINISH SHALL BE AS DIRECTED BY ENGINEER.

8. COORDINATE DIFFUSERS, REGISTERS AND GRILLES WITH CEILING AND WALL CONSTRUCTION. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LENGTHS AND FOR FRAMING AND MITERING ARRANGEMENTS THAT MAY DIFFER FROM THOSE SHOWN ON HVAC DRAWINGS.

24. SLEEVES AND PENETRATIONS

A. DUCT SLEEVES AND OPENINGS

1. MATERIALS FOR PREPARED OPENINGS IN PARTITIONS SHALL MATCH CONSTRUCTION PENETRATED.

25. ESCUTCHEONS AND DUCT COLLARS

A. PROVIDE ADJUSTABLE ESCUTCHEONS ON EXPOSED PIPING THAT PASSES THROUGH FINISHED FLOORS, WALLS AND CEILINGS. ESCUTCHEONS SHALL BE CHROMIUM-PLATED CAST BRASS, SIZED TO COVER SLEEVE OPENING AND TO ACCOMMODATE PIPE AND INSULATION.

B. PROVIDE 4" WIDE 20-GAUGE GALVANIZED SHEET METAL COLLARS AT SLEEVES AND PREPARED OPENINGS, SIZED TO COVER ENTIRE DUCT PENETRATION, INCLUDING SLEEVE AND SEAL, AND TO ACCOMMODATE DUCT AND INSULATION AS NECESSARY. EDGES SHALL HAVE MILLED LIPS GROUND SMOOTH. PAINT TO MATCH FINISH OF DUCT, OR AS DIRECTED BY ARCHITECT.

26. MOTORS, STARTERS AND WIRING

A. PROVIDE MOTORS AND CONTROLS AND FURNISH STARTERS FOR HVAC EQUIPMENT. PROVIDE CONTROL AND OTHER RELATED WIRING INCLUDING INTERLOCKS. POWER WIRING (TO PANEL BOARDS, DISCONNECT SWITCHES, STARTERS AND MOTORS) WILL BE PROVIDED UNDER THE 26 SECTIONS. STARTERS THAT ARE NOT INTEGRAL TO EQUIPMENT WILL BE INSTALLED AND WIRED UNDER THE 26 SECTIONS.

B. UNLESS OTHERWISE SPECIFIED, MOTORS SHALL BE NEMA DESIGN B, CONSTANT SPEED, AND SELF-VENTILATED SQUIRREL CAGE INDUCTION. MOTORS SHALL HAVE 1.15 SERVICE FACTOR UNLESS TOTALLY ENCLOSED. MOTORS SHALL HAVE CLASS B INSULATION.

1. MOTORS UNDER  $\frac{1}{2}$  HP, SHALL BE DESIGNED FOR 120V, 60 HZ, SINGLE-PHASE, UNLESS OTHERWISE SPECIFIED.

2. MOTORS  $\frac{1}{2}$  HP AND OVER SHALL BE AS REQUIRED IN SCHEDULES.

C. ALL MOTORS SHALL BE HIGH OR PREMIUM EFFICIENCY TYPE. THEY SHALL CONFORM TO NEMA STANDARD MG-1-12.53A AND SHALL HAVE THEIR EFFICIENCIES DETERMINED IN ACCORDANCE WITH IEEE STANDARD 112 METHOD B. THE NEMA NOMINAL EFFICIENCY SHALL BE LISTED ON THE MOTOR NAMEPLATE.

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Project No. 22048

ARCHITECTS

ARCHITECTURE  
ENGINEERING  
SITE PLANNING  
INTERIOR DESIGN

MECHANICAL SPECIFICATIONS

PUBLIC WORKS GARAGE  
NETHER PROVIDENCE TOWNSHIP  
5 BROOKHAVEN ROAD  
WALLINGFORD, PA. 19086

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	03/29/23

DATE: 03.29.23

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SHEET NO.

M-4

SHEET 5 OF 6

- D. STARTERS THAT REQUIRE INTERLOCKS OR REMOTE CONTROL SHALL BE MAGNETIC WITH HAND-OFF-AUTOMATIC SWITCH (FAST-SLOW-OFF-AUTO FOR TWO-SPEED MOTORS) IN COVER. PROVIDE MAGNETIC STARTERS, AS NECESSARY, WITH AUXILIARY CONTACTS, BUTTONS AND SWITCHES IN REQUIRED CONFIGURATIONS. REFER TO DRAWINGS FOR INTERLOCK REQUIREMENTS. STARTERS SHALL BE BY SINGLE MANUFACTURER: CUTLER-HAMMER, CLARK, ARROW HART OR SQUARE D.
1. OTHER MOTORS SHALL BE PROVIDED WITH A MANUAL STARTER WITH ON-OFF SWITCH.
  2. CONTROL RELAY FOR EACH STARTER SHALL BE FOR OPERATION ON 120V, SINGLE PHASE, AND TRANSFORMER OF SUFFICIENT CAPACITY WITHIN STARTER CASE SHALL BE FURNISHED FOR THIS PURPOSE.
  3. PROVIDE INVERSE TIME LIMIT OVERLOAD AND UNDER VOLTAGE PROTECTION IN EACH LEG AND WITH PILOT LIGHTS. PROVIDE RED AND GREEN ON-OFF PILOT LIGHTS.
  4. PROVIDE NAMEPLATES WITH ENGRAVED WHITE LETTERING TO DESIGNATE AREA AND EQUIPMENT SERVED.

2.7 FANS FOR SUPPLY AND EXHAUST

- A. PROVIDE FANS THAT ARE CERTIFIED TO BEAR THE AMCA SEAL, WITH:
1. MOTORIZED OR GRAVITY BACK DRAFT DAMPERS (SEE SCHEDULE FOR MORE INFORMATION).
  2. BIRD SCREEN.
  3. DISCONNECT SWITCH.
  4. INLET VENTURI ORIFICE.
  5. VIBRATION ISOLATION.
  6. PERMANENTLY-LUBRICATED BALL BEARINGS.
  7. ENCLOSED, FAN-COOLED MOTOR.
  8. JUNCTION BOX.
- B. BELT DRIVES (WHERE APPLICABLE) SHALL HAVE 5% SPEED VARIATION AND SPRING-LOADED BELT TENSIONER.
- C. FANS SHALL BE BY PENN, JENN-AIR, COOK, ACME, ILG OR GREENHECK AS SCHEDULED.
- D. PROVIDE COMPANION VARIABLE-SPEED DRIVE, WHERE SPECIFIED.

PART 3 - EXECUTION

3.1 START-UP, TESTING AND BALANCING

- A. GENERAL
1. PROVIDE QUALIFIED PERSONNEL, EQUIPMENT, APPARATUS AND SERVICES FOR START-UP, TESTING AND BALANCING OF MECHANICAL SYSTEMS, TO PERFORMANCE DATA SHOWN IN SCHEDULES, AS SPECIFIED, AND AS REQUIRED BY CODES, STANDARDS, REGULATIONS AND AUTHORITIES HAVING JURISDICTION INCLUDING CITY, TOWN OR COUNTY INSPECTORS, OWNERS AND ARCHITECT. NOTE THAT SOME BAS START-UP PROCEDURES REQUIRE THE COOPERATION OF THE BALANCING CONTRACTOR, THE EQUIPMENT MANUFACTURER'S REPRESENTATIVE. ENSURE THAT ALL CONTRACTORS ARE PRESENT ON SITE DURING THE ENTIRE TIME THAT THESE PROCEDURES TAKE PLACE. NOTE THAT SOME PROCEDURES LISTED BELOW HAVE A DISTINCT ORDER OF PRECEDENCE, E.G., THE TESTING OF THE TEMPERATURE CONTROL SYSTEM SHALL NOT OCCUR UNTIL MAJOR PIECES OF MECHANICAL EQUIPMENT HAVE BEEN STARTED UP AND TESTING IS COMPLETE. ENSURE THAT ANY LISTED ORDERS OF PRECEDENCE FOR PROCEDURES ARE FOLLOWED.
  2. START-UP, TESTING AND BALANCING SHALL NOT DIMINISH GUARANTEE REQUIREMENTS.
  3. NOTIFY ENGINEER AND AUTHORITIES INVOLVED AT LEAST TWO WEEKS BEFORE START-UP TESTING AND BALANCING BEGINS.
  4. BEFORE TEMPERATURE CONTROL TESTING BEGINS, A MEETING SHALL BE HELD AT THE SITE WITH THE BALANCING CONTRACTOR, THE BAS CONTROL CONTRACTOR, AND THE MECHANICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL PRESENT THE ENGINEER WITH THE COMPLETED CHECKLISTS (CONTAINED IN THIS SPECIFICATION) CERTIFYING THAT EQUIPMENT START-UP AND TESTING HAS BEEN COMPLETED. THE TEMPERATURE CONTROL CONTRACTOR SHALL THEN PRESENT HIS PROCEDURES FOR TESTING THE BAS SYSTEM TO THE ENGINEER FOR REVIEW AND APPROVAL.
  5. WHEN THE TEMPERATURE CONTROL TESTING HAS BEEN COMPLETED, A SECOND MEETING WILL BE HELD AT THE SITE BETWEEN THE PARTIES MENTIONED ABOVE. AT THIS TIME, THE TEMPERATURE CONTROL CONTRACTOR SHALL PRESENT THE ENGINEER WITH THE COMPLETED CONTROLS START UP CHECKLIST (CONTAINED IN THE SPECIFICATION). THE BALANCING CONTRACTOR SHALL PRESENT CERTIFICATES OF CALIBRATION FOR BALANCING INSTRUMENTS, PROPOSED BALANCING FORMS AND PROPOSED BALANCING PROCEDURES.
  6. IT SHOULD BE THE RESPONSIBILITY OF THE CONTRACTOR TO SET UP THESE MEETINGS. IF, THOUGH NO FAULT OF THE ENGINEER, THE ABOVE TWO MEETINGS DO NOT TAKE PLACE AND THE TEMPERATURE CONTROL START UP AND BALANCING PROCEEDS, THE CONTRACTOR SHALL BE FULLY RESPONSIBLE TO SOLVE ANY ENSURING HVAC PERFORMANCE PROBLEMS.
  7. DO NOT COVER OR CONCEAL WORK BEFORE TESTING AND INSPECTION AND OBTAINING APPROVAL.
  8. INSTRUMENTS FOR TESTING AND BALANCING SHALL HAVE BEEN CALIBRATED WITHIN ONE MONTH PRIOR TO TESTING AND BALANCING. CALIBRATION SHALL BE TRACEABLE TO NBS STANDARDS. PROVIDE PHOTOSTAT OF CERTIFICATE OF CALIBRATION TO ARCHITECT'S REPRESENTATIVE AT MEETING DEMONSTRATING BALANCING PROCEDURES MENTIONED IN PARAGRAPH 4 ABOVE.
  9. LEAKS, DAMAGE, AND DEFECTS DISCOVERED OR RESULTING FROM START UP, TESTING AND BALANCING SHALL BE REPAIRED OR REPLACED TO LIKE-NEW CONDITION WITH ACCEPTABLE MATERIALS. TESTS SHALL BE CONTINUED UNTIL SYSTEM OPERATES WITHOUT ADJUSTMENTS OR REPAIRS.
  10. REPORT ON REPORTING FORMS SUBMITTED TO ENGINEER FOR APPROVAL IN ADVANCE AND ON FORMS PROVIDED BY ENGINEER.
  11. FOR EACH PIECE OF EQUIPMENT, COPY NAMEPLATE DATE AND INCLUDE IN REPORT.
  12. SUBMIT COPY OF TESTING AND BALANCING REPORTS BY ELECTRONIC MEANS TO ENGINEER FOR APPROVAL.
  13. PROVIDE CAPACITY AND PERFORMANCE OF EQUIPMENT BY FIELD TESTING. INSTALL EQUIPMENT AND INSTRUMENTS REQUIRED FOR TESTING, THERMO-CELLS AND GAUGE CONNECTIONS AT NO ADDITIONAL COST TO OWNER.
  14. QUALIFIED REPRESENTATIVE OF EQUIPMENT MANUFACTURER SHALL BE PRESENT AT TEST.
  15. START-UP TESTING AND BALANCING PROCEDURES OUTLINED BELOW ARE THE MINIMUM EFFORT REQUIRED FOR THE PROJECT. CONTRACTOR SHALL USE ANY ADDITIONAL PROCEDURES HE FEELS WILL BE NECESSARY TO PROPERLY START UP, TEST AND BALANCE THE JOB.
- B. EQUIPMENT START-UP
1. START UP THE FOLLOWING PIECES OF EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND WITH MANUFACTURER'S REPRESENTATIVE PRESENT:
    - a. FANS
    - b. AIR HANDLING UNITS.
- C. AIR BALANCING
1. GENERAL
    - a. PROVIDE QUALIFIED PERSONNEL, EQUIPMENT AND SERVICES FOR BALANCING AND ADJUSTING OF MECHANICAL SYSTEMS. SUBMIT RESUMES AT DEMONSTRATION OF BALANCING MEETING.
    - b. PERSONNEL SHALL BE EXPERIENCED AND QUALIFIED TO PERFORM, RECORD, AND EVALUATE ALL PROCEDURES CONTAINED HERE AND/OR AS OUTLINED ON DRAWINGS.
    - c. FOR EACH BELT DRIVEN FAN ON JOB, PROVIDE, UNDER THE WORK OF THE MECHANICAL SECTION, ONE SPARE SHEAVE OF SIZE TO BE DETERMINED AFTER TRAVERSES ARE COMPLETE.
    - d. SUBMIT PROCEDURES, RECORDING FORMS, AND TEST EQUIPMENT FOR REVIEW PRIOR TO BALANCING, AS DESCRIBED IN PARAGRAPH A.4 ABOVE.

1. BALANCING PROCEDURE OR SEQUENCE IS CONTAINED HEREIN.
2. BALANCING SHALL NOT BEGIN UNTIL SYSTEM HAS BEEN INSTALLED COMPLETE AND CAPABLE OF NORMAL OPERATION.
  - a. ALL GRILLES, DAMPERS, FANS, AND LINKAGES SHALL BE INSTALLED AND OPERATING PRIOR TO BALANCING.
  - b. SYSTEM SHALL BE CAPABLE OF OPERATING UNDER CONTROL AS SPECIFIED ON DRAWINGS AND/OR CONTAINED HEREIN.
3. INDEPENDENT BALANCING AGENCY SHALL HAVE THE FOLLOWING QUALIFICATIONS:
  - a. AGENCY IS KNOWN TO HAVE SPECIALIZED IN BALANCING COMMERCIAL HVAC SYSTEM FOR AT LEAST 3 YEARS.
  - b. AGENCY EMPLOYED BALANCING TECHNICIANS SHALL BE QUALIFIED TO BALANCE HVAC SYSTEM TO ENGINEER'S SATISFACTION. SUBMIT RESUME OF TECHNICIAN.
  - c. AT LEAST ONE (1) BALANCING TECHNICIAN SHALL REMAIN ON FROM START TO ACCEPTANCE OF FINAL BALANCE REPORT.
  - d. AGENCY SHALL BE APPROVED BY ENGINEER.



L I N N   A R C H I T E C T S

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MECHANICAL SPECIFICATIONS

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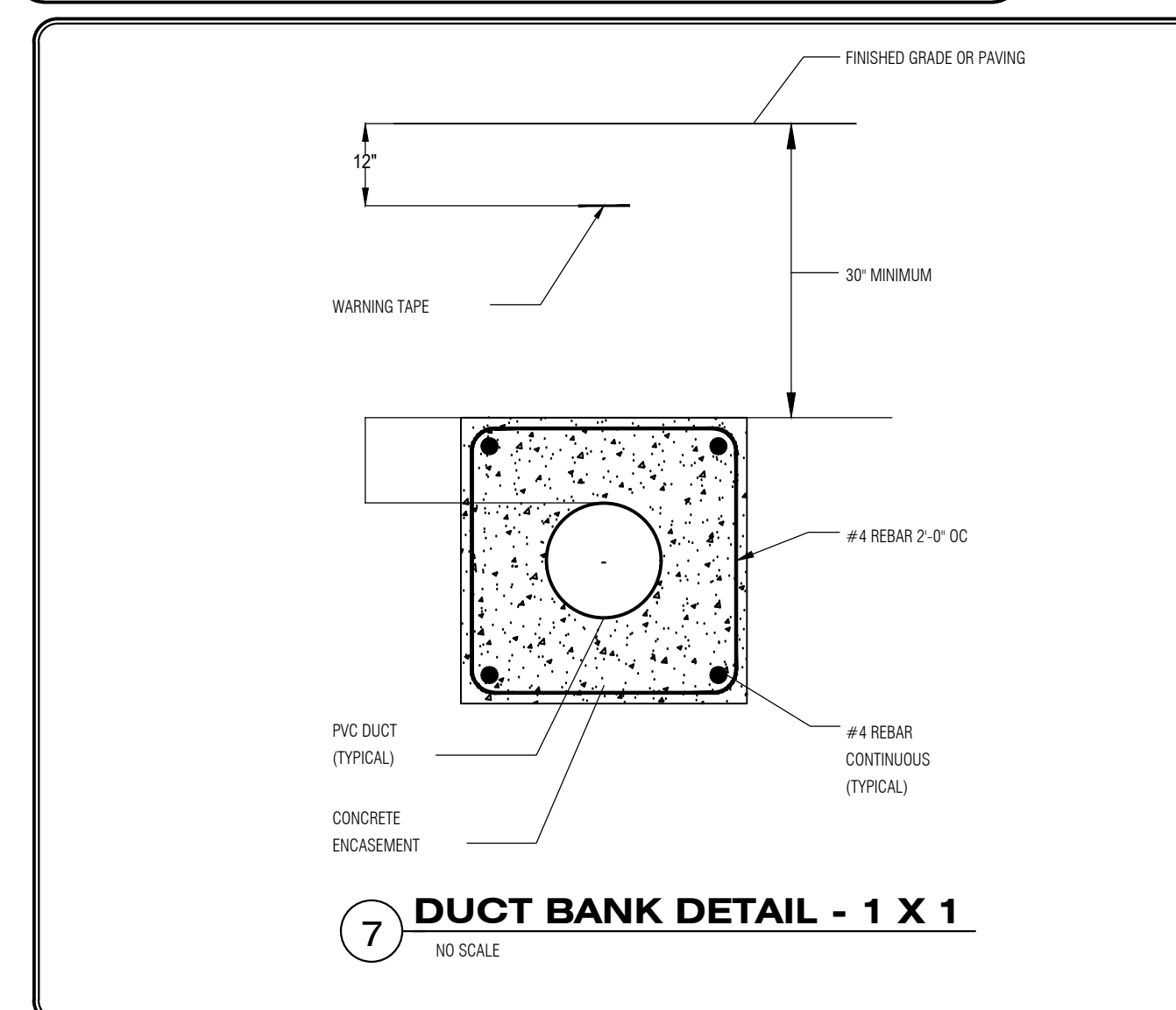
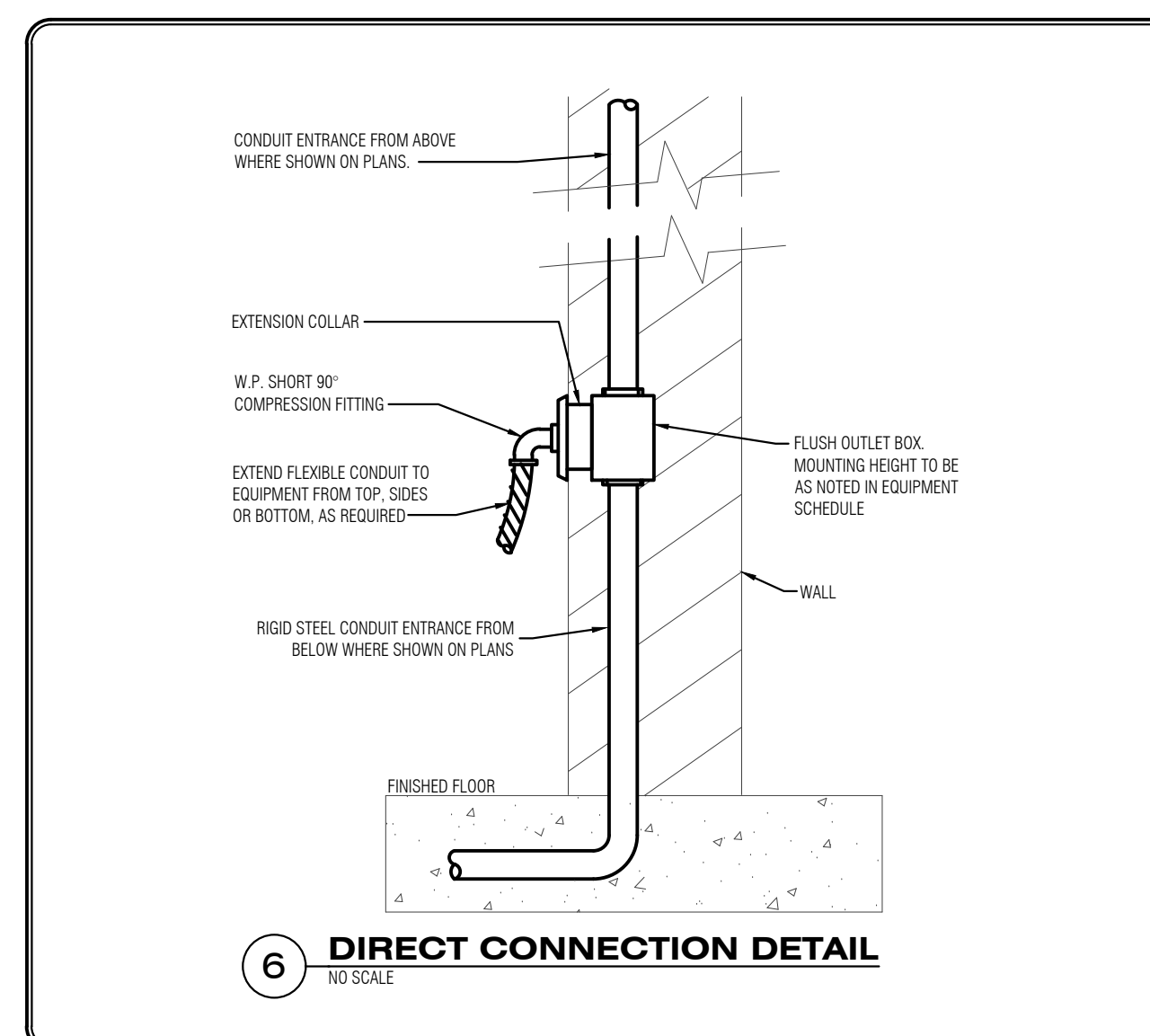
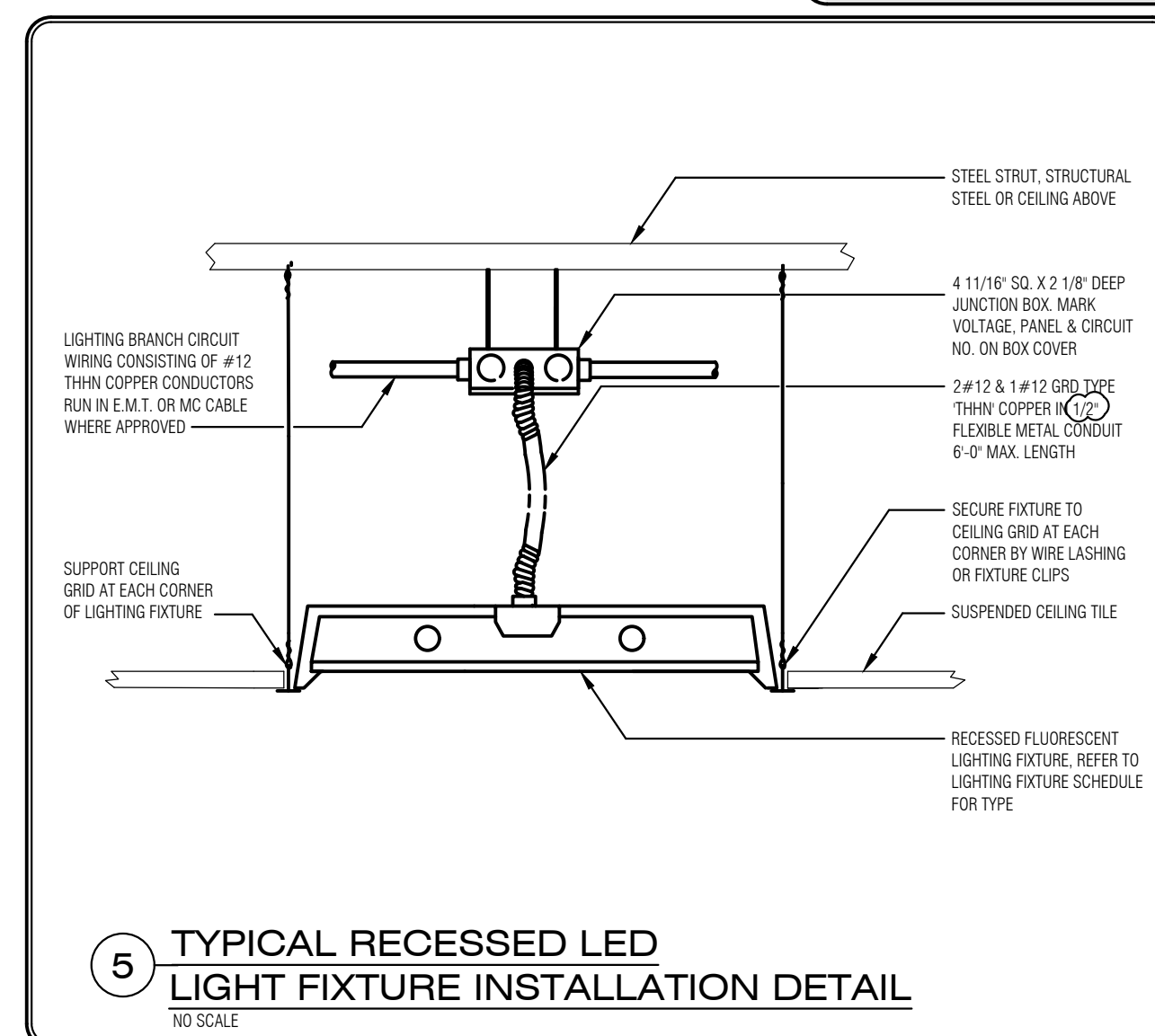
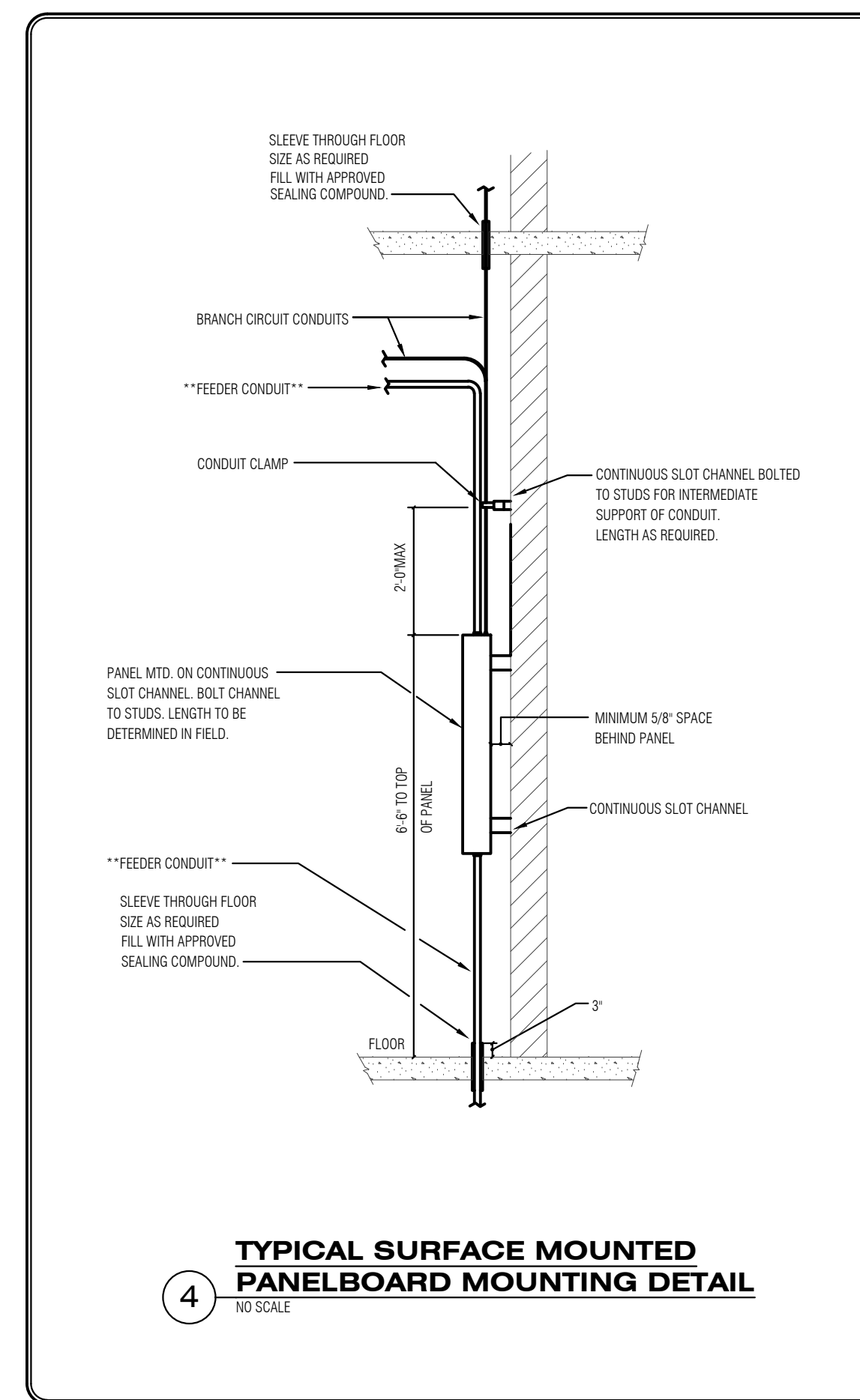
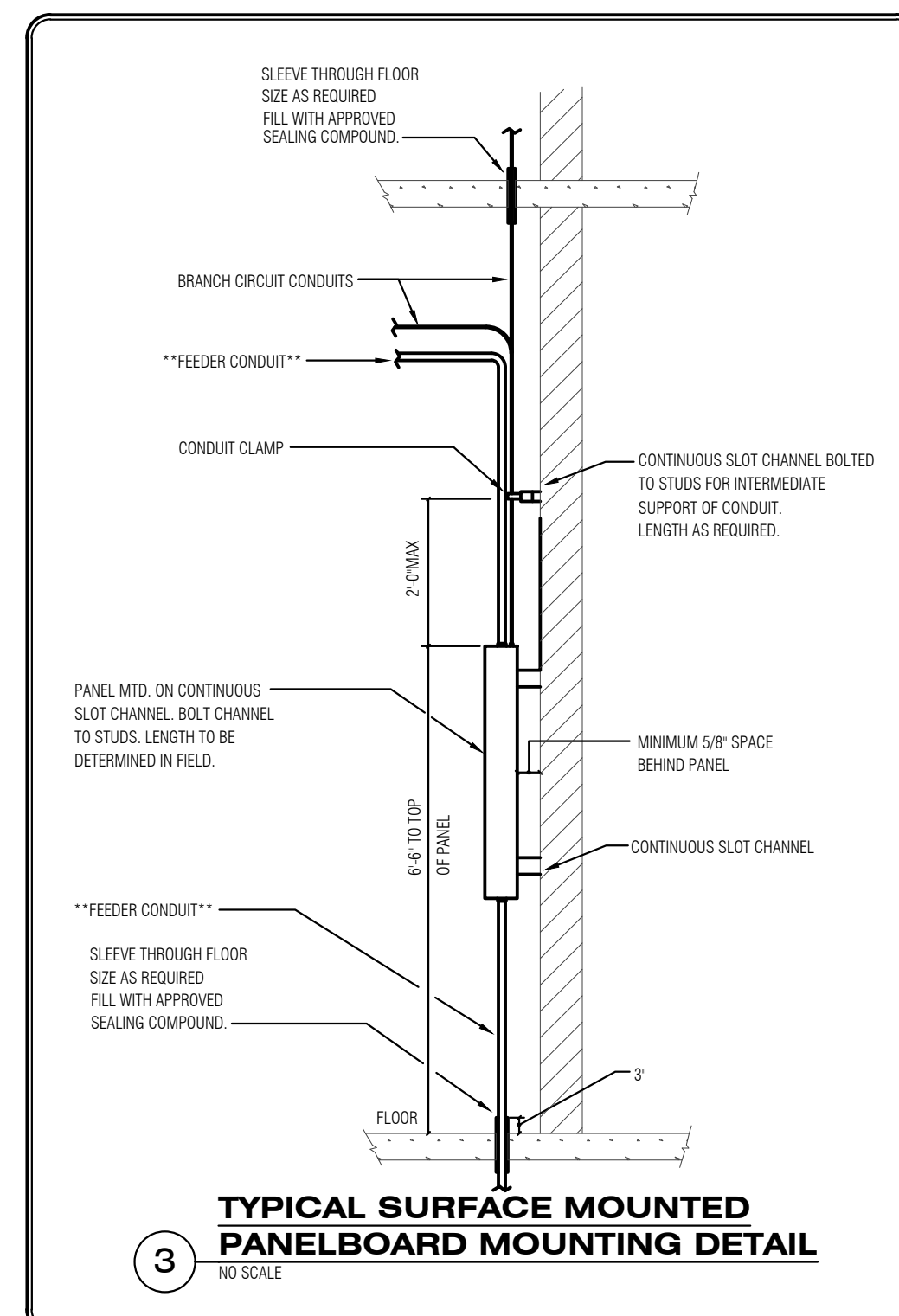
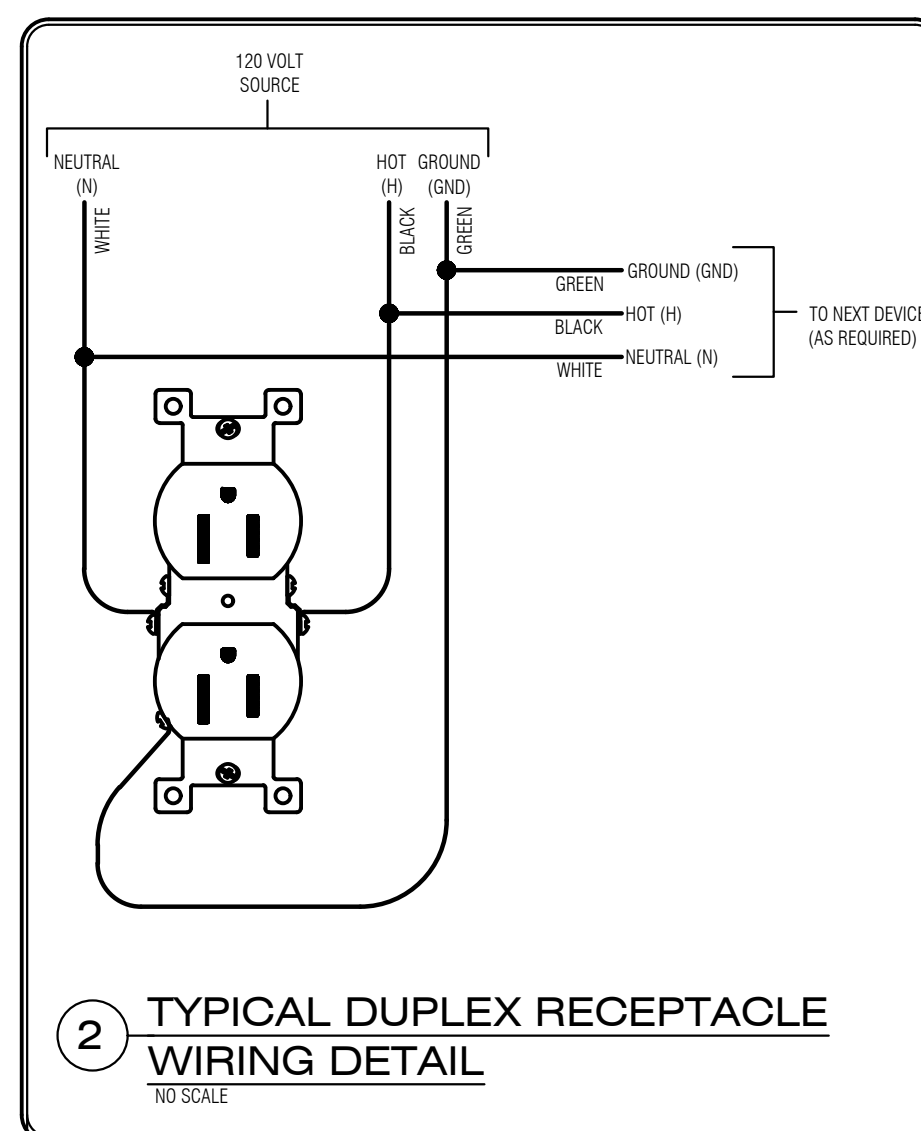
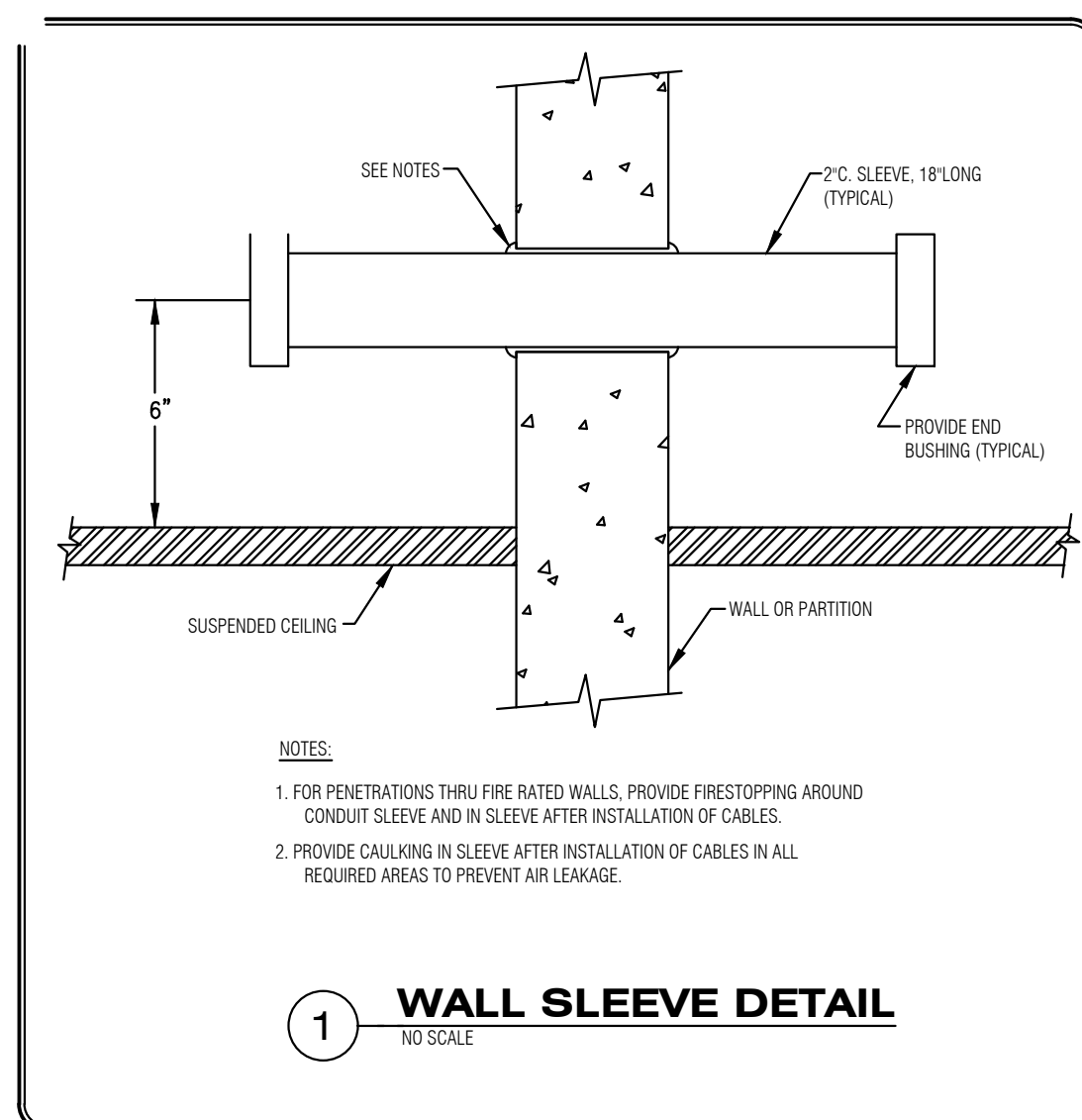
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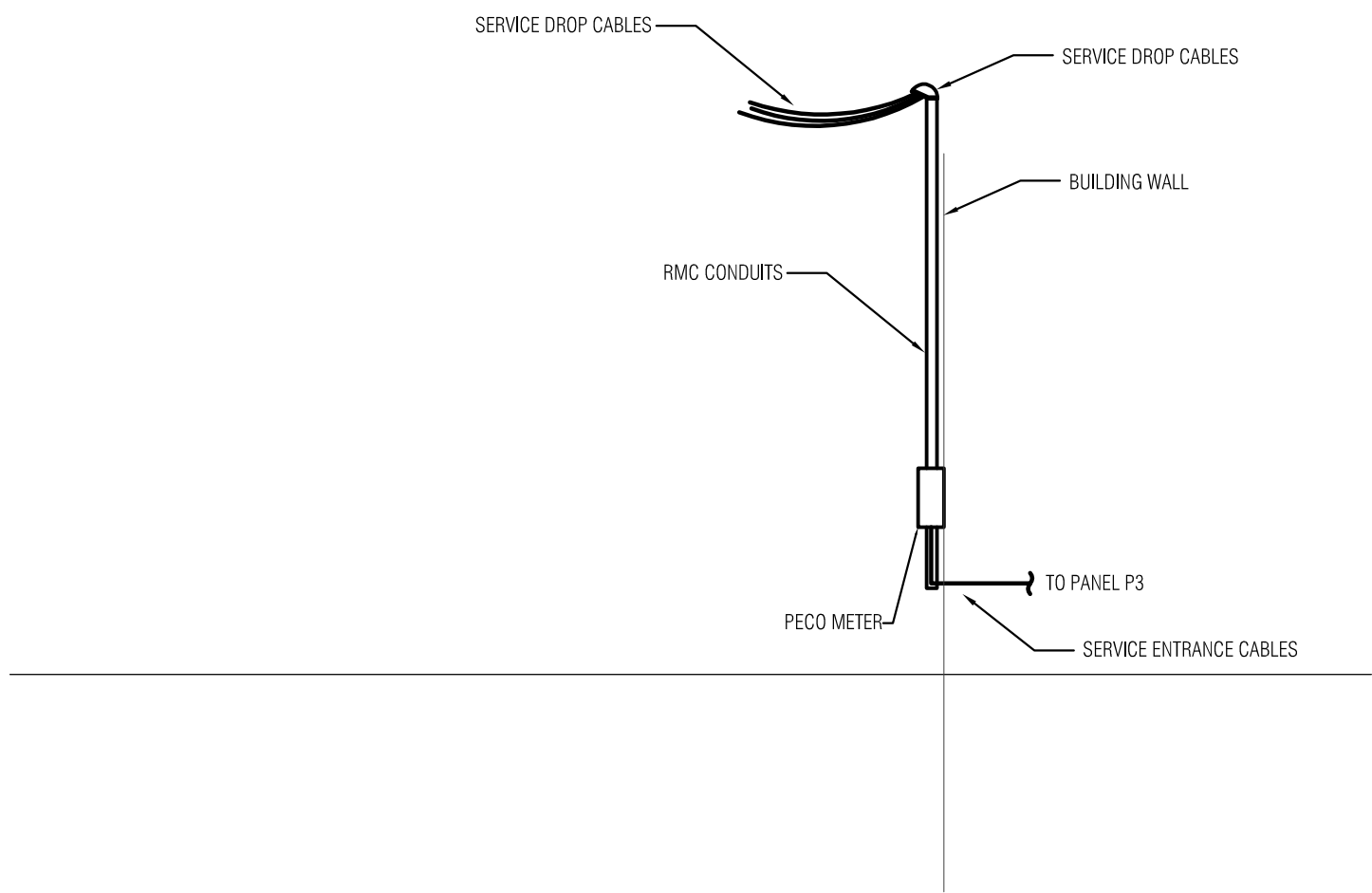
M-5

SHEET 6 OF 6

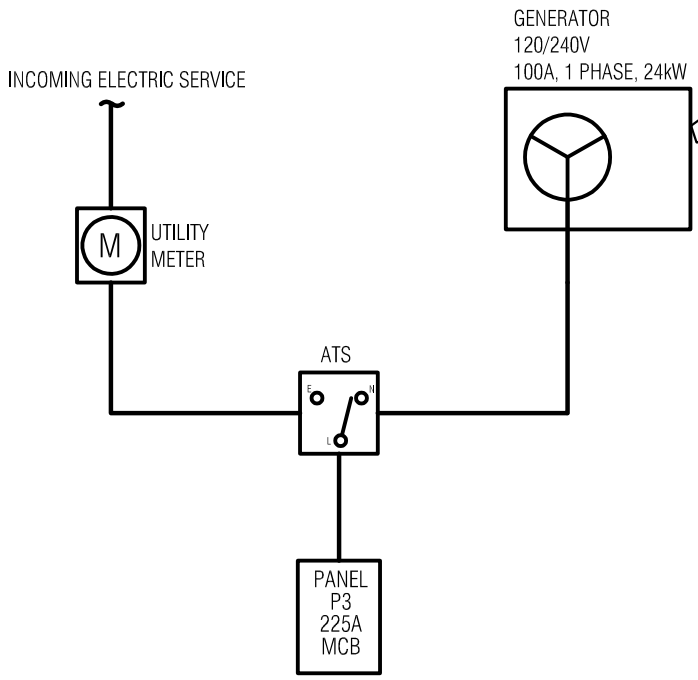








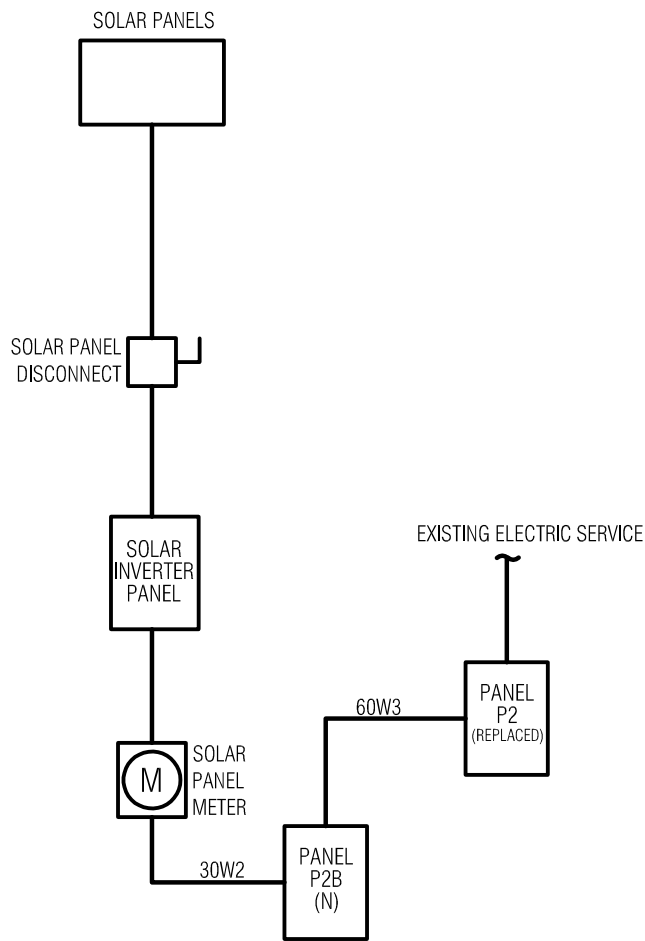
1 **INCOMING SERVICE  
DETAIL**  
NO SCALE



2 **SINGLE LINE DIAGRAM  
NEW SERVICE**  
NO SCALE

ELECTRICAL KEYED NOTES:

GENERATOR FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.



3 **SINGLE LINE DIAGRAM  
EXISTING SERVICE**  
NO SCALE

ELECTRICAL DETAILS	
PUBLIC WORKS GARAGE	
NETHER PROVIDENCE TOWNSHIP	
5 BROOKHAVEN ROAD WALLINGFORD, PA. 19086	

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DATE: 03.29.23 SCALE: AS NOTED DRAWN BY: AH CHECKED BY: DMF PROJ. NO.: 22048	1	ISSUED FOR BID	03/29/23	

E-3

SHEET 4 OF 5

PANEL P1 (DEMO)				VOLTAGE: 120/240 V, 1ø , 3 WIRE			
LOCATION: Garage to be Demo'ed				MAIN : 100 A MCB			
MOUNTING:				NEUTRAL:			
				AIC RATING:			
				LOAD (KW)			
CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	A	B	A	B
1		20A/2P	Solar Panels(1)				
3							
5		20A/1P					
7							
9		30A/2P	Hot Water Heater(D)				
11		20A/1P	Tire Machine(D,N)				
13		20A/1P	Tire				
15		15A/1P	Doors 1&2(1)				
17		15A/1P	Doors 3&4(1)				
19		15A/1P	Doors 5&6(1)				
21		15A/1P	Doors 7&8(D)				
23		20A/1P					
SUB-TOTAL KW				0.0	0.0	0.0	0.0
TOTAL CONNECTED KVA LOAD				0.0 KVA			
TOTAL CONNECTED AMP LOAD				0.0 A			
				NOTES: **SEE DEMOLITION KEYED NOTE 5 ON E-2			
				(1) TO BE RELOCATED TO SUB			
				(D): SEE DEMOLITON KEYED NOTE 4 ON E-2			

PANEL P2(DEMO)				VOLTAGE: 120/240 V, 1ø , 3 WIRE			
LOCATION: Garage Existing to Be Demo				MAIN : 100 A MCB			
MOUNTING:				NEUTRAL:			
				AIC RATING:			
				LOAD (KW)			
CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	A	B	A	B
1		40A/2P	Lunch Room Heater	3840		2880	
3					3840		1920
5		20A/1P	Downstairs Heater	1920		1920	
7		20A/1P	John's Outlet		1920		
9		20A/1P	Flood Light on Chim	200		1920	
11		20A/1P	Soda Machine/Shed Light Switch		1920	300	
13		20A/1P	Back Part of Shop	1920		1920	
15					5760	600	
17		60A/2P	Welding Recep/Air Comp	5760		600	
19		20A/1P	Outside Recepts 7&8(D)			200	
SUB-TOTAL KW				13.6	13.4	9.2	3.0
TOTAL CONNECTED KVA LOAD				39.3 KVA			
TOTAL CONNECTED AMP LOAD				163.9 A			
				NOTES:			

PANEL P2B(NEW)				VOLTAGE: 120/240 V, 1ø , 3 WIRE			
LOCATION: Garage Existing to Remain				MAIN : 60 A MCB			
MOUNTING:				NEUTRAL:			
				AIC RATING:			
				LOAD (VA)			
CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	A	B	A	B
1				1500		1440	
3	20W3	20A/2P	Solar Panels(1)		1500		1440
5	15W2	15A/1P	Doors 1&2(1)*	1440		1440	
7	15W2	15A/1P	Doors 3&4(1)*		1440	1440	
9	15W2	15A/1P	Doors 5&6(1)*	1440			
11		20A/1P	SPARE				
SUB-TOTAL KVA				4.4	2.9	2.9	2.9
TOTAL CONNECTED KVA LOAD				13.1 KVA			
TOTAL CONNECTED AMP LOAD				54.5 A			
				NOTES:**SEE DEMOLITION NOTE 3 ON E-2.			

NETHER PROVIDENCE LIGHTING FIXTURE SCHEDULE											
TYPE	DESCRIPTION	MANUFACTURER & MODEL NUMBER	SPECIFIED BY	VOLTAGE	LAMP					MOUNTING	COMMENTS
					QUANTITY	TYPE	WATTAGE	DIMMABLE	COLOR TEMP		
A	8' LED LENSED STRIP LIGHT	COLUMBIA LIGHTING LCL-8-40-ML-EDU	AEI	MVOLT	1	LED	96	YES	4000K	PENDANT	'EM' = WITH ELL 14 EMERGENCY BATTERY BACKUP
B	2' X 4' RECESSED LIGHT	COLUMBIA LIGHTING LJT24-35-MLG-FSA12-EDU	AEI	120	1	LED	27	YES	3500k	WALL/ CEILING	
C	5" DIAMETER WET RATED DOWNLIGHT	WAC LIGHTING FM-05RN-930-12W-1050-WT	AEI	120	1	LED	11	NO	3000k	SURFACE	
D	2' X 2' RECESSED LIGHT	COLUMBIA LIGHTING LJT22-35-MLG-FSA12-EDU	AEI	120	1	LED	31	NO	3500k	RECESSE D	WET RATED FOR SHOWER USE
E	AREA LIGHT WALL PACK	HUBBELL LIGHTING LNC4-36L-4K-065-1--U-PCU	AEI	120	1	LED	80	NO	3000k	SURFACE	AREA WALL PACK W/ INTEGRAL PHOTOCELL
G	TWO HEAD OUTDOOR LED EMERGENCY LIGHTS WITH BATTERY BACKUP	CIATA	AEI	MVOLT	2	LED		NO		WALL	
EM	TWO HEAD INDOOR LED EMERGENCY LIGHTS WITH BATTERY BACKUP	HYKOLITY	AEI	MVOLT	2	LED		NO		WALL	
X	EXIT SIGN	DUAL LITE EVC-U-R-W-D4	AEI	120	1	LED	2	NO		WALL/ CEILING	THERMO PLASTIC, LED, COMBO EXIT/ EMERGENCY, REMOTE CAPABLE - 90

LIGHTING FIXTURE SCHEDULE NOTES

- REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN(S) FOR THE CEILING TYPE AND EXACT LOCATION OF ALL LIGHT FIXTURES.
- PROVIDE PLAS TER/GWB CEILING FRAMING KITS WHERE APPLICABLE.
- ALL LAMPS SHALL HAVE A COLOR RENDERING OF 3500 DEGREES KELVIN, UNLESS OTHERWISE NOTED.
- PROVIDE ELECTRONIC BALLAST IN APPLICABLE FIXTURES, UNLESS OTHERWISE NOTED
- ALL FIXTURES RECESSED WITHIN A FIRE RATED CEILING SHALL BE INSTALLED IN A FIRE RATED ENCLOSURE TO MAINTAIN THE CEILING FIRE RATING. THIS CAN BE DONE BY EITHER A FIRE RATED FIXTURE, A TENMAT ENCLOSURE OR A SAFELITE ENCLOSURE.

PANEL P2(NEW)				VOLTAGE: 120/240 V, 1ø , 3 WIRE			
LOCATION: Garage New Panel				MAIN : 100 A MCB			
MOUNTING:				NEUTRAL:			
				AIC RATING:			
				LOAD (KW)			
CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	A	B	A	B
1		40A/2P	Lunch Room Heater	3840		2880	
3					3840		1920
5		20A/1P	Downstairs Heater	1920		1920	
7		20A/1P	John's Outlet		1920		
9		20A/1P	Flood Light on Chim	200		1920	
11		20A/1P	Soda Machine/Shed Light Switch		1920	300	
13		20A/1P	Back Part of Shop	1920		1920	
15					5760	600	
17		60A/2P	Welding Recep/Air Comp	5760		600	
19						200	
21							
23							
25							
27							
29							
SUB-TOTAL KW				13.6	13.4	9.2	3.0
TOTAL CONNECTED KVA LOAD				39.3 KVA			
TOTAL CONNECTED AMP LOAD				163.9 A			
				NOTES:			

PANEL P3				VOLTAGE: 120/240 V, 1ø , 3 WIRE			
LOCATION: MECHANICAL ROOM				MAIN : 225 A			
MOUNTING: SURFACE				NEUTRAL:			
				AIC RATING:			
				LOAD (VA)			
CKT NO.	WIRE ID	CB AMP/POLE	DESCRIPTION	A	B	A	B
1	20W2	20A/1P	Tire Machine	1920		1870	
3	20W2	20A/1P	Tire Machine		1920		1870
5	60W2	60A/2P	Air Compressor AC-1	4800		500	
7					4800	900	
9	20W2	20A/2P	EH-A	375		900	
11					375		1500
13	20W2	20A/1P	EF-1, EF-2	360		1500	
15	20W2	20A/1P	EF-3, EF-4		900		5750
17	20W2	20A/1P	Office/Toilet Room Recepts	720		5750	
19	20W2	20A/1P	Interlock MOD		300	300	
21	20W2	20A/1P	Garage Interior Lighting	1800		540	
23	20W2	20A/1P	Garage Ceiling Fans		1440		540
25	20W2	20A/1P	Garage Recepts(Exterior)	450		450	
27	20W2	20A/1P	RH-1, RH-2		250	500	
29						540	
31		40A/2P	Electric Vehicle Charging Station*			500	
33							
35							
37							
39							
41							
SUB-TOTAL KW				10.4	10.0	12.1	11.9
TOTAL CONNECTED KVA LOAD				44.3 KVA			
TOTAL CONNECTED AMP LOAD				184.7 A			
				NOTES:*PROVISION FOR FUTURE IINSTALLATION			



5561 Pennell Road | Media PA 19063  
Project No. 22048

L I N N  
ARCHITECTS

ARCHITECTURE  
ENGINEERING  
SITE PLANNING  
INTERIOR DESIGN

140 N. PROVIDENCE ROAD  
MEDIA, PENNSYLVANIA 19063  
TEL: 610-566-7044  
FAX: 610-566-3258

ELECTRICAL SCHEDULES

PUBLIC WORKS GARAGE

NETHER PROVIDENCE TOWNSHIP

5 BROOKHAVEN ROAD  
WALLINGFORD, PA. 19086

REVISIONS

DATE: 03/29/23

DESCRIPTION

NO. 1

ISSUED FOR BID

03/29/23

DRAWN BY: AH

CHECKED BY: DWF

PROJ. NO.: 22048

SHEET NO.: E-4

SHEET 5 OF 5

GENERAL SPECIFICATIONS	
1.	DRAWINGS AND SPECIFICATIONS FORM COMPLIMENTARY REQUIREMENTS; PROVIDE WORK SPECIFIEDAND NOT SHOWN, AND WORK SHOWN BUT NOT SPECIFIED AS THOUGH EXPLICITLY REQUIRED BY BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES AND MATERIALS, OBVIOUSLY NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.
2.	DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL COMPONENTS NECESSARY FOR A COMPLETE INSTALLATION. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. COORDINATE WITH ARCHITECTURAL DRAWINGS AND OTHER TRADES.
3.	ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.
4.	THE INTENTION IS FOR INSTALLATION OF COMPLETE AND OPERATING SYSTEMS INSTALLED IN ACCORDANCE WITH THE ASSOCIATED MANUFACTURERS INSTRUCTIONS. NOT EVERY COMPONENT REQUIRED IS SHOWN. THE CONTRACTOR SHALL INCLUDE ALL COMPONENTS NORMALLY ASSOCIATED WITH THE PARTICULAR SYSTEM AND/OR REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE SYSTEM SHALL BE FULLY COMMISSIONED AND SIGNED OFF BY AN OFFICER OF THE RESPECTIVE CONTRACTOR, PRIOR TO FINAL OWNER ACCEPTANCE TESTING, PROVIDE PERSONNEL TO ASSIST IN 24 HOURS OF ACCEPTANCE TESTING.
5.	GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH THE DESIGN DOCUMENTS.
6.	PRIOR TO COMMENCING WORK, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND EQUIPMENT DATA FOR MATERIALS AND EQUIPMENT TO THE ARCHITECT FOR REVIEW AND APPROVAL. MATERIALS AND EQUIPMENT SHALL NOT BE INSTALLED BEFORE SHOP DRAWINGS ARE REVIEWED AND APPROVED. SCHEDULE AT LEAST TEN WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL. REVIEW SHALL BE ALLOWED.
7.	THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES REQUIRED FOR SAFE EXECUTION AND COMPLETION OF WORK, AND FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
8.	COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS.
9.	ALL MATERIALS, EQUIPMENT AND METHOD OF INSTALLATION SHALL BE ACCORDANCE WITH THE STANDARDS, REGULATIONS, CODES, ORDINANCES, AND LAW OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.
10.	IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC, SPRINKLER, PLUMBING, STRUCTURAL AND GENERAL ARCHITECTURE. OFFSETS IN PIPING AND OFFSETS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
11.	DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE OR OTHER CAUSE. THE CONTRACTOR IS RESPONSIBLE FOR ANY COSTS INCURRED AS A RESULT OF THE CHANGES NEEDED TO ACCOMMODATE THE SUBSTITUTED EQUIPMENT INCLUDING THE WORK OF OTHER TRADES.
12.	EACH CONTRACTOR IS RESPONSIBLE FOR ITS CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF ITS NEW WORK. CUTTING AND PATCHING SHALL BE COMPLETED IN A NEAT AND WORKMANLIKE MANNER. PATCHING MATERIALS SHALL MATCH EXISTING MATERIALS TO THE GREATEST EXTENT POSSIBLE. PROVIDE TOUCH-UP TO MATCH EXISTING SURROUNDING AREAS OF CUTTING AND PATCHING WORK.
13.	INTERRUPTIONS TO EXISTING SERVICES AND SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE OWNER. INCLUDE ALL PREMIUM TIME ASSOCIATED WITH INTERRUPTIONS. INTERRUPTIONS SHALL BE SCHEDULED WITH OWNER 48 HOURS IN ADVANCE.
14.	CONTRACTOR SHALL COORDINATE ITS RESPECTIVE CEILING MOUNTED EQUIPMENT WITH OTHER TRADE CONTRACTORS PRIOR TO INSTALLATION TO AVOID CONFLICTS.
15.	ANY DEMOLITION SHALL BE COORDINATED WITH OWNER, ARCHITECT, & G.C. AND ENGINEER. ALL DEBRIS SHALL BE CLEANED UP AND REMOVED FROM THE SITE BY THE END OF THE DAY. PRIOR TO DISPOSAL OF EQUIPMENT AND MATERIALS, TURN OVER TO THE OWNER ANY REMOVED EQUIPMENT AND MATERIALS PER OWNERS REQUEST.
16.	WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEAD ROOM AT ALL TIMES. DO NOT RUN PIPES, DUCTS, AND CONDUIT EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS. MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS, SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.
17.	COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS.
18.	ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
19.	ALL MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS NOTED OTHERWISE.
20.	MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
21.	SUBSTITUTED PRODUCTS SUBMITTED AND APPROVED FOR USE THAT NECESSITATE CHANGES TO THE WORK OF THAT OR ANY OTHER TRADES OF CONTRACT SHALL BE COORDINATED AND ARRANGED BY THE CONTRACTOR WHO SUBMITTED THE SUBSTITUTION WITHOUT ADDITIONAL COST TO THE OWNER.
22.	PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS RECOMMENDATIONS.
23.	EACH RESPECTIVE CONTRACTOR SHALL PROVIDE PROPER ACCESS TO EQUIPMENT THAT REQUIRES INSPECTION, REPLACEMENT OR REPAIR. ACCESS PANELS SHALL BE A MINIMUM OF 12" X 12" OR AS NEEDED FOR APPROPRIATE ACCESS, TO BE SUPPLIED TO GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS IN RATED ASSEMBLIES SHALL BE ACUDOR FW-5050. ACCESS PANELS IN NON-RATED DRYWALL CEILINGS SHALL BE WIND-LOCK "STEALTHY". ACCESS PANELS IN NON-RATED WALLS SHALL BE ADUODR UP-500.
24.	CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL APPLICABLE EQUIPMENT WITH THE ELECTRICAL CONTRACTOR.
25.	ALL EQUIPMENT, PIPING, INSULATION, ETC., INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
26.	AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN TURN OVER ALL OPERATING MANUALS, MAINTENANCE MANUALS, AND "AS BUILT" DRAWINGS TO OWNER AT CONCLUSION OF CONSTRUCTION.
27.	DO NOT SUPPORT EQUIPMENT FROM SUSPENDED CEILINGS. SUPPORT ALL EQUIPMENT AND PIPING FROM BUILDING, STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. NOTIFY ARCHITECT AND STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT.
28.	RUN PIPING/WIRING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS.
29.	PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING/WIRING.
30.	ANY REFERENCE TO ELECTRICAL, PLUMBING AND HVAC CONTRACTORS, NOTED ON THESE DRAWINGS OR STATED IN THE SPECIFICATIONS SHALL NOT BE MISCONSTRUED AS AN INTENTION TO DEFINE SEPARATE CONTRACTORS FOR THE RESPECTIVE WORK. THE GENERAL CONTRACTOR SHALL COORDINATE AND PROVIDE A COMPLETE BUILDING WITH COMPLETE MECHANICAL AND ELECTRICAL SYSTEMS, REGARDLESS OF ANY SPECIFICATION REFERENCES TO OTHER CONTRACTORS.
31.	GARANTEE WORK OF THIS CONTRACTOR IN WRITING FOR ONE YEAR FROM THE DATE OF OWNERS ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. PROMPTLY, REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATIONS THAT DEVELOP DEFECTS WITHIN THIS PERIOD. PROMPTLY AND TO OWNERS SATISFACTION, CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEED AT NO ADDITIONAL COST TO OWNER. SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERRUPTED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.

PLUMBING NOTES & SPECIFICATIONS	
1.	PIPE MATERIALS A. SERVICE: ABOVE GROUND WATER PIPING PIPE MATERIAL: TYPE I COPPER TUBING ASTM882 FACTORY. FITTING MATERIAL: WROUGHT COPPER AND BRONZE SOLDER JOINTS. PIPE JOINT: 95-5 LEAD FREE SOLDER B. SERVICE: SANITARY WASTE & VENT PIPE MATERIAL: DWV RATED PVC PIPING FITTING MATERIAL: PVC DRAINAGE PATTERN PIPE JOINT: SOLVENT JOINT OR COUPLING W/ NEOPRENE GASKET BELOW GRADE C. SERVICE: ABOVE GROUND COMPRESSED AIR PIPE MATERIAL: TYPE I COPPER, HARD DRAWN, ASTM B 88 FITTINGS: WROUGHT COPPER, ANSI B16.22 JOINTS: 95-5 LEAD FREE SOLDER
2.	VALVES A. BALL VALVES 2" AND SMALLER ON WATER SERVICES SHALL BE 2 PIECE ALL BRONZE WITH FULL PORT STEM AND STEEL BALL, LITE ON SEATS, SOLDER ENDS AND 600 PSI COLD WORKING PRESSURE. JENKINS 902, APOLLO OR WATTS APPROVED EQUAL, UNLESS OTHERWISE NOTED.
3.	INSULATION A. INSULATION SHALL BE BY OWENS CORNING, CERTAIN-TEED OR MANVILLE B. INSULATION, JACKETS AND ADHESIVES SHALL BE FLAME RETARDANT AND SHALL HAVE ASTM E-84 FIRE HAZARD RATINGS OF 25 FLAME SPREAD, 90 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED. C. DOMESTIC HOT WATER: NEW DOMESTIC HOT WATER SUPPLY AND RECIRCULATION PIPING SHALL BE INSULATED WITH HEAVY DENSITY FIBERGLASS WITH SELF-SEALING LAP AND ALL SERVICE JACKET, FITTINGS AND VALVES SHALL BE INSULATED WITH TWO LAYERS BLANKET INSULATION WITH PVC COVERS. INSULATION SHALL BE RATED FOR MAXIMUM OPERATING TEMPERATURE OF 450 DEGREES F. REFER TO PIPE INSULATION MATRIX ON THIS SHEET FOR REQUIRED INSULATION THICKNESS. D. DOMESTIC COLD WATER: NEW COLD WATER SUPPLY PIPING, VALVES AND FITTINGS SHALL BE INSULATED AS SPECIFIED FOR HOT WATER SUPPLY PIPING. IN ADDITION, CONTINUOUS VAPOR BARRIER SHALL BE MAINTAINED. REFER TO PIPE INSULATION MATRIX ON THIS SHEET FOR REQUIRED INSULATION THICKNESS. E. RAIN WATER CONDUCTOR: HORIZONTAL RAIN WATER CONDUCTORS SHALL BE INSULATED WITH MINIMUM 1" THICK INSULATION. 4. HANGERS, ANCHORS, CLAMPS AND INSERTS A. PROVIDE CAST BRASS SPLIT RING HINGE HANGERS, SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PIPE LINES, PREVENT VIBRATION, SECURE PIPING IN PLACE. SECURE HANGERS TO INSERTS WHERE PRACTICAL. HANGER RODS SHALL HAVE MACHINE THREADS. B. HANGER RODS SHALL BE CONNECTED TO BEAM CLAMP. UL APPROVED CONCRETE INSERTS OR PHILLIPS SHALL BE APPROVED EQUAL EXPANSION SHIELD. RAMSET OR POWER DRIVEN INSERTS WILL NOT BE ALLOWED. C. HANGER SPACING SHALL MEET REQUIREMENTS OF STATE AND LOCAL CODES. 5. SLEEVES AND PENETRATIONS A. PIPE SLEEVES THROUGH FIRE RATED CONSTRUCTION SHALL BE SCHEDULE 40 STEEL. SLEEVES THROUGH PARTITIONS AND NON FIRE RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCAL LONGITUDINAL SEAMS. B. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBER WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN ONE INCH OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.
6.	TESTING A. TEST AND ADJUST PLUMBING SYSTEMS AS REQUIRED BY ARCHITECT AND AUTHORITIES THAT HAVE JURISDICTION. PERFORM TEST RECOMMENDED BY MANUFACTURERS OF MATERIAL AND EQUIPMENT; THIS REQUIREMENT MAY BE WAIVED BY ARCHITECT. TEST PLUMBING SYSTEMS UNDER PRESSURE AND HEADS SPECIFIED IN PLUMBING CODES. CLEAN SYSTEMS THOROUGHLY BEFORE TESTING. FIXTURES, EQUIPMENT, PIPE, VALVES AND FITTINGS SHALL BE FREE OF GREASE, METAL CUTTINGS, DIRT AND OTHER FOREIGN MATERIAL. REPAIR STOPPAGE, DISCOLORATION AND DAMAGE TO PARTS OF BUILDING, FINISHES AND FURNISHINGS DUE TO FAILURE TO PROPERLY CLEAN PIPING SYSTEM.
7.	DISINFECTION OF WATER SYSTEMS A. WATER PIPING SYSTEMS SHALL BE THOROUGHLY DISINFECTED WITH A SOLUTION CONTAINING NO LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE. CHLORINATING MATERIALS SHALL BE EITHER LIQUID CHLORINE OR SODIUM HYPOCHLORITE SOLUTION. SHALL BE INTRODUCED INTO THE SYSTEM AND DRAWN TO ALL POINTS IN THE SYSTEM. DISINFECTION SOLUTION SHALL BE ALLOWED TO REMAIN IN SYSTEM FOR 24 HOURS, DURING THIS TIME, VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER DISINFECTION, SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL RESIDUAL CHLORINE CONTENT IS NO GREATER THAN 2 PARTS PER MILLION.
8.	IDENTIFICATION OF PLUMBING SYSTEMS: A. PROVIDE PIPING IDENTIFICATION LABELS AND DIRECTIONAL ARROWS ON ALL PLUMBING SYSTEMS. INSTALL LABELS AT 10' INTERVALS & AT EACH SIDE OF FLOOR & WALL SEPARATIONS. B. PROVIDE VALVE TAGS AT EACH DOMESTIC WATER SHUTOFF VALVE. PROVIDE VALVE TAG INDEX IDENTIFYING VALVE NUMBER, LOCATION AND SERVICE. 9. MISCELLANEOUS A. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE CURRENT PLUMBING CODE AND ALL APPLICABLE CODES AND STANDARDS B. PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT. PROVIDE BALL VALVES ON ALL WATER MAIN BRANCHES IN CORRIDORS AND WHERE INDICATED ON DRAWINGS. ALL VALVES SHALL BE ACCESSIBLE. C. PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS. D. PROVIDE AT LEAST THREE-ELBOW SWING FOR PIPE TAKE-OFFS TO RISERS. E. PITCH PIPING MINIMUM 1/8" PER 1'-0" TOWARDS DIRECTION OF FLOW TO ALLOW FOR DRAINING. F. PROVIDE TRAP GUARDS ON ALL FLOOR DRAINS. G. WHERE PIPING (DOMESTIC WATER, SANITARY, VENT, GAS, ETC.) IS LOCATED WITHIN WALLS, PROVIDE NAILER PLATES WHERE PIPING IS LOCATED WITHIN 1 1/2" OF THE FRAMING MEMBER. H. GAS WATER HEATER DRAIN PANS SHALL BE METAL.

PLUMBING GENERAL NOTES	
1.	ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE CURRENT PLUMBING CODE AND ALL APPLICABLE LOCAL CODES AND DRAWINGS.
2.	ALL MATERIALS AND EQUIPMENT SHALL BE NEW.
3.	MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
4.	PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS RECOMMENDATIONS.
5.	PROVIDE ACCESS PANELS FOR EQUIPMENT THAT REQUIRES PERIODIC SERVICE & TO ACCESS VALVES AND ALL CONCEALED MECHANICAL EQUIPMENT.
6.	CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL DRAWINGS.
7.	ALL PLUMBING EQUIPMENT, PIPING, INSULATION, ETC., INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
8.	PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT. PROVIDE BALL VALVES ON ALL WATER MAIN BRANCHES IN CORRIDORS AND WHERE INDICATED ON DRAWINGS. ALL VALVES SHALL BE ACCESSIBLE.
9.	SUPPORT ALL EQUIPMENT PIPING FROM BLDG STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. NOTIFY STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT.
10.	RUN PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS.
11.	PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
12.	PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.
13.	PROVIDE AT LEAST THREE-ELBOW SWING FOR PIPE TAKE-OFFS TO RISERS.
14.	HORIZONTAL SANITARY PIPING 2 1/2" AND SMALLER TO BE PITCHED A MINIMUM OF 1/4" PER FOOT IN THE DIRECTION OF THE FLOW.
15.	HORIZONTAL SANITARY PIPING 3" AND UP TO AND INCLUDING 6" TO BE PITCHED AT A MINIMUM OF 1/8" PER FOOT IN THE DIRECTION OF FLOW.
16.	HORIZONTAL SANITARY PIPING GREATER THAN 6" TO BE PITCHED A MINIMUM OF 1/16" PER FOOT IN THE DIRECTION OF FLOW.
17.	CLEANOUTS SHALL BE PROVIDED AT THE BASE OF ALL SANITARY AND RAIN WATER VERTICAL STACKS.
18.	ANY REFERENCE TO ELECTRICAL, PLUMBING AND HVAC CONTRACTORS, NOTED ON THESE DRAWINGS OR STATED IN THE SPECIFICATIONS SHALL NOT BE MISCONSTRUED AS AN INTENTION TO DEFINE SEPARATE CONTRACTORS FOR THE RESPECTIVE WORK. THE GENERAL CONTRACTOR SHALL CO-ORDINATE AND PROVIDE A COMPLETE BUILDING WITH COMPLETE MECHANICAL AND ELECTRICAL SYSTEMS, REGARDLESS OF ANY SPECIFICATION REFERENCES TO OTHER CONTRACTORS.

PLUMBING FIXTURE SCHEDULE						
SYMBOL	DESCRIPTION	FIXTURE				
		MFGR	MODEL	TYPE	SIZE	
WC-1	PUBLIC ADA WATER CLOSET FLUSH TANK	MANSFIELD	137-160	ELONGATED BOWL, VITREOUS CHINA	1.6 GPF	---
LAV-1	WALL HUNG LAVATORY	ZURN	Z5350	WALL HUNG, VITREOUS CHINA	19" X 17"	MOEN #WS8
EEW-1	EMERGENCY EYEWASH	GUARDIAN	G1814	STAINLESS STEEL	-	-
SHO-1	PREFABRICATED SHOWER	FREEDOM SHOWERS	APFQ3838 BF1PRRFL	SHOWER UNIT	38 1/2" X 37 1/8"	SYMMONS #S9608-PL
LT-1	LAUNDRY TUB	MUSTEE	19CF	THERMOPLASTIC	24" X 20" X 13"	---

LEGEND	
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
ARCH	ARCHITECT
BV	BALL VALVE
BLDG	BUILDING
CV	CHECK VALVE
CO	WALL CLEANOUT
CO	FLOOR CLEANOUT
CW	COLD WATER
CD	CONDENSATE
CTE	CONNECT TO EXISTING
	DIRECTION OF SLOPE
DN	DOWN
DWG	DRAWING
ED	EMERGENCY DRAIN
ED, DN	ELBOW DOWN OR DROP
UP	ELBOW UP OR RISE
FLR	FLOOR
FD	FLOOR DRAIN
	FLOW IN DIRECTION OF ARROW
G	GAS
HB	HOSE BIBB W/ VACUUM BREAKER
HW	HOT WATER
HWR	HOT WATER RETURN
140	140 DEG. HOT WATER
IWR	INDIRECT WASTE RECEPTOR
LAV	LAVATORY
MFR	MANUFACTURER
MSB	MOP SERVICE BASIN
NTS	NOT TO SCALE
	P-TRAP
RAC	RUN ABOVE CEILING
RAF	RUN ABOVE FLOOR
RBF	RUN BELOW FLOOR
RCP	REINFORCED CONCRETE PIPE
RWC	RAIN WATER CONDUCTOR
SAN	SANITARY
DP, DN	TEE LOOKING DOWN
UP	TEE LOOKING UP
TV	TYPE
UR	URINAL
V	VENT
VTR	VENT THRU ROOF
WH	WALL HYDRANT
WC	WATER CLOSET

FIXTURE BRANCH CONNECTION SCHEDULE					
FIXTURE	COLD WATER	HOT WATER	WASTE	VENT	
WATER CLOSET (FLUSH VALVE)	1-1/4"	-	4"	2"	
URINAL (FLUSH VALVE)	1"	-	2"	2"	
LAVATORY/HAND SINK	1/2"	1/2"	2"	1-1/2"	
DRINKING FOUNTAIN	1/2"	-	2"	1-1/2"	
JANITOR'S SINK	3/4"	3/4"	3"	2"	
FLOOR DRAIN	-	-	2"3"	2"3"	
FLOOR SINK	-	-	3"1/4"	2"3"	
1-COMP/2-COMP/3-COMP SINK	3/4"	3/4"	-	-	
NOTE: PIPE SIZES SHOWN ARE MINIMUM					

PLUMBING FIXTURE SCHEDULE										*COORDINATE WITH ARCHITECT/OWNER FINAL PLUMBING FIXTURE SELECTIONS PRIOR TO PURCHASE/BID.	
FITTING			TRAP	COLOR	CARRIER	REMARKS					
	TYPE	SUPPLY									
	-	1/2" SUPPLY, ANGLE STOP, C.B. ESCUTCHEON	INTEGRAL	WHITE	---	SOLID PLASTIC, OPEN FRONT SEAT W/O COVER BEMIS #1955CT					
	SINGLE LEVER CONTROL	1/2" SUPPLIES, ANGLE STOPS, C.B. ESCUTCHEON	1 1/2" PVC W/ CLEANOUT PLUG	WHITE	---	PROVIDE TRUEBRO #102W & 105W SUPPLY & WASTE PIPING INSULATION LESS FAUCET ESCUTCHEON & MCGUIRE OFFSET LAVATORY GRID DRAIN, #PRODRAINWCSAN.					
	PUSH BAR ACTIVATION	1/2" SUPPLIES	1 1/2" PVC	STAINLESS STEEL	---	W/ GUARDS, #G3600LF THERMOSTATIC MIXING VALVE					
WM	SINGLE LEVEL CONTROL W/ 60" SHOWER WAND & SHOWER HEAD	1/2" SUPPLIES	2" PVC	WHITE	---	W/ JR SMITH #2005 SHOWER DRAIN, GRAB BAR, FOLDING SEATING, COLLAPSIBLE WATER RETAINER, CURTAIN AND ROD, SLIDE BAR KIT, & TEMP VALVE FOR FAUCET.					
	6" SWING SPOUT FAUCET	1/2" SUPPLIES, ANGLE STOPS, C.B. ESCUTCHEON	1 1/2" PVC	WHITE	---	---					

WATER HEATER SCHEDULE									
UNIT NO.	LOCATION	MFG	MODEL NO.	STORAGE CAPACITY	HEATING MEDIUM	ELECTRICAL CHARACTERISTICS	INPUT	RECOVERY @ 100° F	REMARKS
WH-1	MECHANICAL ROOM	BRADFORD WHITE	LG2PDV50H603N	48 GALLON	GAS	120V, 1PH	60 MBH	58 GPH	W/ WATTS #PLT-S-M1 2-GALLON EXPANSION TANK & IPS CORPORATION WATER HEATER PAN

AIR COMPRESSOR SCHEDULE									
UNIT NO.	LOCATION	MFG	MODEL NO.	STORAGE CAPACITY	HORSE POWER	ELECTRICAL CHARACTERISTICS	OUTPUT	PSI OUTPUT	REMARKS
AC-1	MECHANICAL ROOM	EMAX	ESP10V120V1	120 GALLON	10 HP	208V, 1PH, 40 AMPS FLA	38 CFM	175 PSI	PROVIDE AIR FILTER, OIL WATER SEPARATOR, LUBRICATOR, AND REGULATOR AT DISCHARGE.

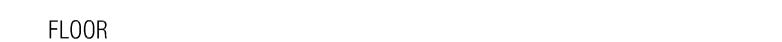
PLUMBING SPECIALTIES				
UNIT NO	DESCRIPTION	MFG	MODEL NO.	REMARK
CO	FLOOR CLEANOUT	JR SMITH	4031	ROUND TOP
CO	WALL CLEANOUT	JR SMITH	4436	FACE OF WALL COVER
OWH-1	OUTSIDE WALL HYDRANT	JR SMITH	HY42	NON-FREEZE HYDRANT W/ LOOSE KEY
FD-1	FLOOR DRAIN	JR SMITH	2005	PROVIDE JR SMITH #2692 TRAP SEAL. SEAL TO BE IN ACCORDANCE WITH ASSE 1072
BFP-1	BACKFLOW PREVENTER	WATTS	LF909	---
HB-1	DUAL-TEMP INTERIOR HOSE BIB	WOODFORD	122	---

PIPE INSULATION MATRIX								
FLUID OPERATING TEMPERATURE RANGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)					
	CONDUCTIVITY Btu x in/(h x ft² x °F)	MEAN RATING TEMPERATURE, °F	LESS THAN 1"	1" TO LESS THAN 1-1/2"	1-1/2" TO LESS THAN 4"	4" TO LESS THAN 8"	8" AND GREATER	
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0	
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5	
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0	
LESS THAN 40	0.20-0.26	75	1.0	1.0	1.0	1.0	1.5	

CODE SUMMARY	
MUNICIPALITY	NETHER PROVIDENCE TOWNSHIP, PA
USE AND OCC. CLASSIFICATION	S1 - STORAGE MODERATE HAZARD , MOTOR VEHICLE REPAIR AND PARK
APPLICABLE CODES	BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE MECHANICAL CODE: 2018 INTERNATIONAL MECHANICAL CODE PLUMBING CODE: 2018 INTERNATIONAL PLUMBING CODE FUEL GAS CODE: 2018 INTERNATIONAL FUEL GAS CODE ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (BY REFERENCE) FIRE CODE: 2018 INTERNATIONAL FIRE CODE ENERGY CODE: 2018 INTERNATIONAL ENERGY CONSERVATION CODE/ASHRAE 90.1-2016

GAS PIPING NOTES	
1.	CONTRACTOR TO VERIFY GAS PRESSURE PRIOR TO BID.
2.	ALL ABOVE GRADE GAS PIPING SHALL BE BLACK STEEL INTERIOR (BASIS OF DESIGN)
3.	ALL BELOW GRADE GAS PIPING SHALL BE POLYETHYLENE OR TRACPIPE PS-I FLEXIBLE GAS PIPING.
4.	LOW PRESSURE GAS PIPE SIZE BASED ON SCHEDULE 40 STEEL PIPING WITH GAS PRESSURE LESS THAN 2 PSI W/ A PRESSURE DROP OF 0.3" AND 0.60 SPECIFIC GRAVITY (2009 IFGC TABLE 402.4(1)). IF ALTERNATE PIPING MATERIAL IS TO BE USED, CONTRACTOR IS RESPONSIBLE FOR ADJUSTING PIPE SIZE TO MEET THE DESIGN PRESSURE DROP.
5.	PROVIDE SHUT OFF VALVE, UNION REDUCER(S), DIRT LEG AND ALL FITTINGS REQUIRED AT EACH UNIT. ALL CONNECTIONS SHALL BE FULL SIZE OF EQUIPMENT, GAS PIPING MATERIALS & INSTALLATION TO BE PER INTERNATIONAL CODES AND UTILITY REQUIREMENTS.
6.	ALL FUEL FIRED EQUIPMENT SHALL HAVE AN EMERGENCY SHUT-OFF. PRESSURE REGULATORS SHALL BE MANUFACTURED BY MAXITROL. PROVIDE VENT LIMITER MANUFACTURED BY MAXITROL. REGULATOR SHALL BE INSTALLED IN A HORIZONTAL UPRIGHT POSITION.
8.	ALL EXTERIOR GAS PIPING TO BE PAINTED. COORDINATE COLOR WITH ARCHITECT.

NETHER PROVIDENCE TWP- PUBLIC WORKS GARAGE PLUMBING - DRAWING INDEX			ISSUE FINAL REV/FORM 1/03/2022 ISSUED FOR 980 03/29/23	
DRAWING NO.	DRAWING TITLE			
P-1	PLUMBING COVER SHEET	●	●	
P-1.1	PLUMBING DETAILS			
P-2	PLUMBING FLOOR PLAN	●	●	
P-3	PLUMBING RISER DIAGRAMS	●	●	
P-4	PLUMBING SPECIFICATIONS	●	●	

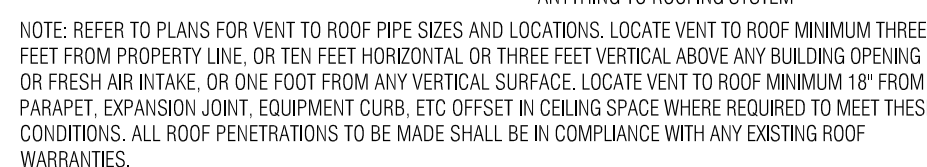


1 DETA  
SCALE: NONE

SCALE: NONE

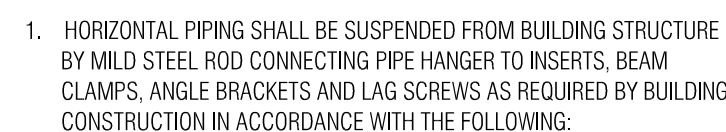


SCALE: NONE



2 VENT  
SCALE: NONE

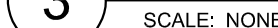
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2. HANGERS ON INSULATED LINES SHALL BE SIZED TO FIT THE OUTSIDE DIAMETER OF PIPE INSULATION. PROVIDE HANGERS FOR INSULATED PIPING WITH 12" LONG, 18 GAUGE GALVANIZED INSULATION SHIELDS.

⑥ PIPE SUPPORT DETAIL

SCALE: NONE



SCALE: NONE



SCALE: NONE

LINN ARCHITECTS

1140 N. PROVIDENCE ROAD

ENGINEERING  
MEDIA, PENNSYLVANIA 19063

TEL: 610-566-7044

**FAX: 610-566-3258**

Project No. 22048

Project No. 22048

## PLUMBING DETAILS

PUBLIC WORKS GARAGE

NETHER PROVIDENCE TOWNSHIP

5 BROOKHAVEN ROAD

WALLINGFORD, PA. 19086

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			SCALE :	1	ISSUED FOR BID
			DRAWN BY :		03/29/23
			AG		
		CHECKED BY :			
		DWF			
SHEET 2 OF 5		PROJ. NO. :			
		22048			

P-1.1

SHEET 2 OF 5



- PLUMBING SHEET NOTES**
- FOR SHALL VERIFY THE EXACT LOCATION, SIZE, CONFIGURATION AND ROUTING IN THE FIELD. ALL INFORMATION SHOWN IS BASED ON BEST INFORMATION AVAILABLE AT THE TIME OF DOCUMENT PREPARATION. CONTRACTOR SHALL REPORT BACK TO ARCHITECT IMMEDIATELY IN WRITING IF ANY DISCREPANCIES ARE FOUND WITH ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND PLUMBING SHEET.
- CONTRACTOR IS RESPONSIBLE FOR ITS CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF ITS NEW WORK. CUTTING AND PATCHING SHALL BE DONE IN A NEAT WORKMANLIKE MANNER. PATCHING MATERIALS SHALL MATCH EXISTING MATERIALS TO THE GREATEST EXTENT POSSIBLE. PROVIDE TIGHT UPON ALL CUTS. PATCHING MATERIALS SHALL BE MATCHED TO THE EXISTING MATERIALS. CONTRACTOR SHALL PROVIDE ACCESS PANELS FOR ALL VALVES, METERS, TEST COMPONENTS ABOVE HARD CEILINGS. COORDINATE EXACT LOCATION, SPECIFICATION WITH ARCHITECT.
- ALL PIPING AS HIGH AS POSSIBLE IN SPACE TO ALLOW FOR HIGHEST POSSIBLE CLEARANCE.
- ALL PIPING ON THE INSULATED, CONDITIONED SIDE OF THE BUILDING.
- CONTRACTOR IS TO VERIFY IN FIELD EXISTING SANITARY INLET, SIZING, AND

- 
- Project No. 22048

LINN ARCHITECTS

ARCHITECTURE  
ENGINEERING  
SITE PLANNING  
INTERIOR DESIGN

Project No. 22048

Project No. 22048

## PLUMBING FLOOR PLAN

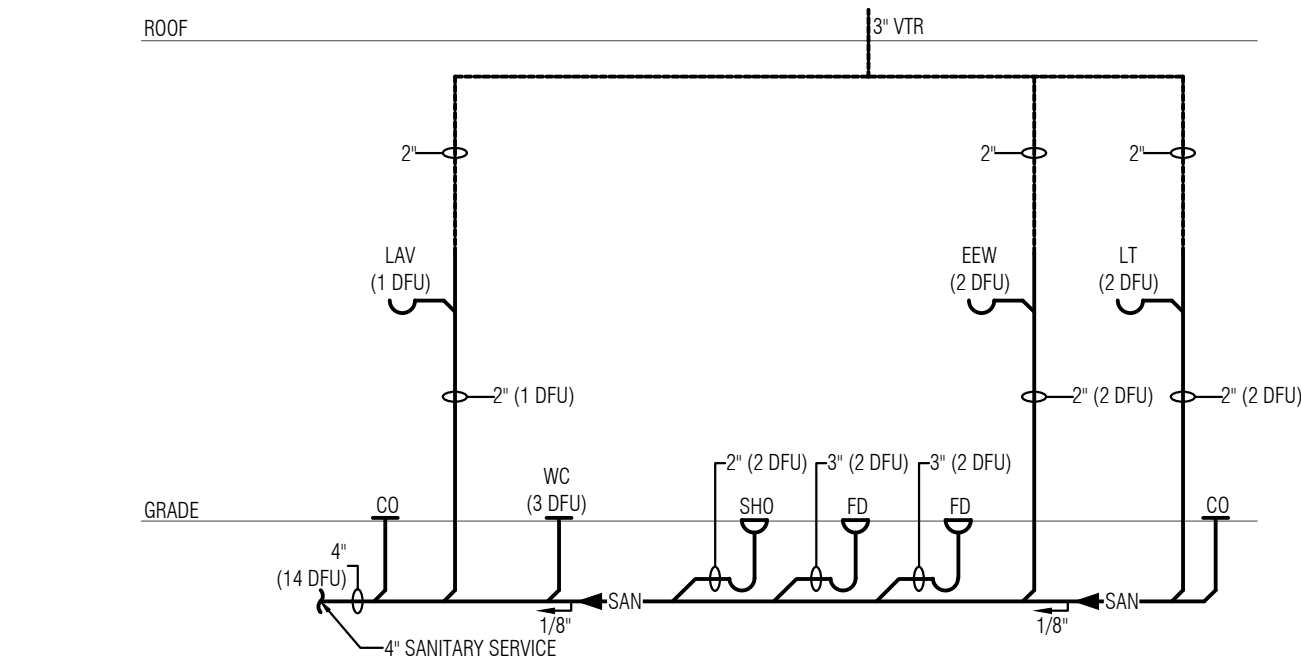
PUBLIC WORKS GARAGE

NETHER PROVIDENCE TOWNSHIP

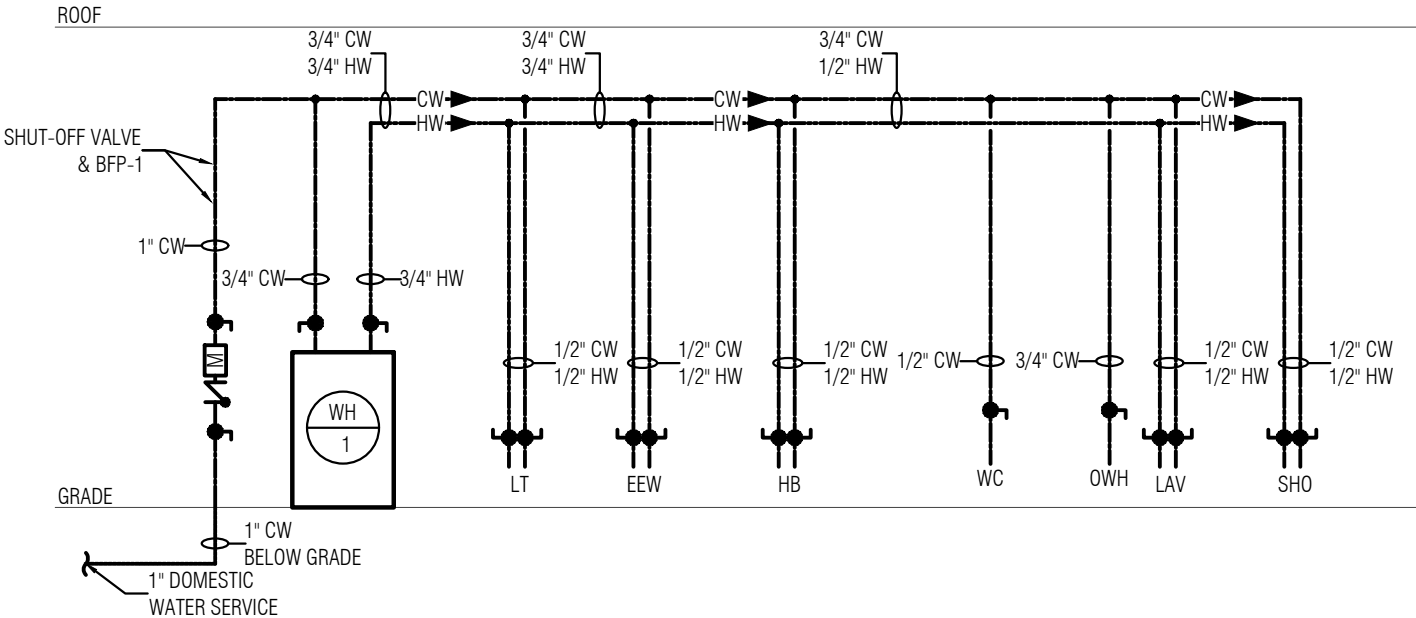
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WALLINGFORD, PA. 19086

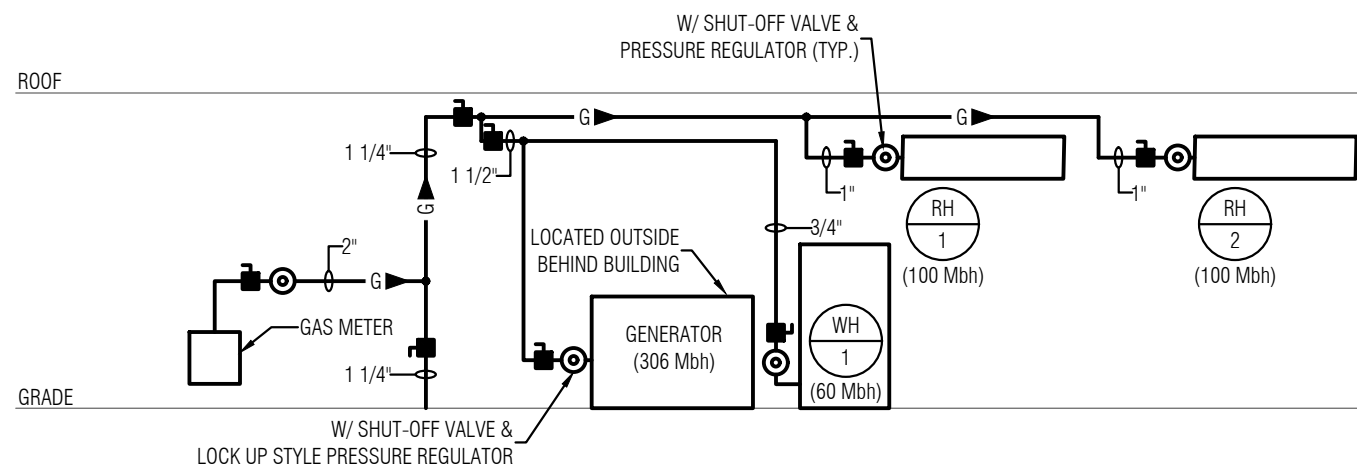
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		SHEET 3 OF 5			



1 SANITARY RISER DIAGRAM - NEW BUILDING  
P-3 NO SCALE



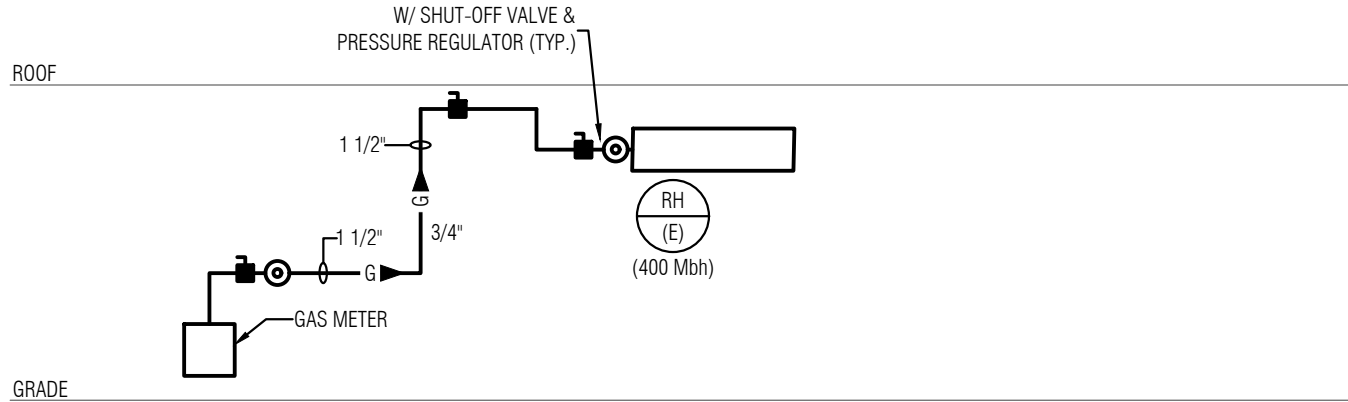
2 DOMESTIC WATER RISER DIAGRAM - NEW BUILDING  
P-3 NO SCALE



GAS PIPING CALCULATION (NEW GARAGE BUILDING)						
GAS TYPE	INLET PRESSURE	PRESSURE DROP	SPECIFIC GRAVITY	LENGTH	TOTAL CONNECTED LOAD	PIPE SIZE*
NATURAL	LESS THAN 2 PSI	0.3" W.C.	0.60	150'	566 Mbh	2"

\*GAS PIPING SIZED PER 2015 INTERNATIONAL FUEL GAS CODE TABLE 402.4(1)

3 GAS RISER DIAGRAM - NEW BUILDING  
P-3 NO SCALE



GAS PIPING CALCULATION (EXISTING GARAGE BUILDING)						
GAS TYPE	INLET PRESSURE	PRESSURE DROP	SPECIFIC GRAVITY	LENGTH	TOTAL CONNECTED LOAD	PIPE SIZE*
NATURAL	LESS THAN 2 PSI	0.3" W.C.	0.60	70'	400 Mbh	1 1/2"

\*GAS PIPING SIZED PER 2015 INTERNATIONAL FUEL GAS CODE TABLE 402.4(1)

4 GAS RISER DIAGRAM - EXISTING BUILDING  
P-3 NO SCALE



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PLUMBING RISER DIAGRAMS  
PUBLIC WORKS GARAGE  
NETHER PROVIDENCE TOWNSHIP  
5 BROOKHAVEN ROAD  
WALLINGFORD, PA. 19086

DATE:	REVISIONS		DATE
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CHECKED BY:			
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PROJ. NO.:			
22048			

SHEET NO. 5  
P-3  
SHEET 4 OF 5

PLUMBING MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SCOPE

A. WORK SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING:

1. INSULATION.
2. VALVES
3. FITTINGS UNIONS, FLANGES AND COUPLINGS.
4. HANGERS, PLATES AND INSERTS.
5. CLEANING, TESTING AND DISINFECTIONS OF PIPING SYSTEMS.
6. GUARANTEES.
7. PLUMBING FIXTURES.
8. DOMESTIC WATER PUMPING, PIPING, PRESSURE REGULATING AND DISTRIBUTION SYSTEMS.
9. DOMESTIC WATER HEATING SYSTEMS.
10. NATURAL GAS SYSTEM.

B. FURNISH FOLLOWING ITEMS FOR INSTALLATION UNDER OTHER DIVISIONS:

1. ACCESS PANELS.

1.2 CONTRACT DOCUMENTS

A. WORK TO BE PERFORMED UNDER THIS DIVISION IS IN CONJUNCTION WITH WORK SHOWN ON THE"P" SERIES DRAWINGS.

1.3 SUBMITTALS

A. MATERIAL AND EQUIPMENT REQUIRING SHOP DRAWING SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:

1. PLUMBING FIXTURES.
2. BACKFLOW PREVENTERS.
3. DOMESTIC WATER HEATING SYSTEM.
4. PRESSURE REDUCING VALVES.
5. PIPE MATERIALS & FITTING
6. PIPE HANGERS & SUPORTS

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. THE TABLE BELOW INDICATES PIPE CLASS FOR EACH SERVICE. REFER TO THE FOLLOWING PAGES FOR EXPANDED SPECIFICATIONS FOR THE RESPECTIVE CLASS.

2.2 PIPE MATERIAL SPEC INDEX

MAXIMUM SERVICE OPERATING LIMITS					
SERVICE	CODE	(PSIG)	TEMP (F)	CLASS	PIPE MATERIALS
DOMESTIC HOT & COLD WATER	HW CW	100	250	A10	COPPER CPVC PEX
SANITARY WASTE & VENT	S	GRAVITY	120	D10	PVC
GAS	G	50	70	A11	C STEEL/GASTITE FLEXIBLE

GENERAL PIPE SPEC NOTES:

1. EACH VALVE TYPE SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. EACH SYSTEM SHALL BE PROVIDED WITH VALVES AS REQUIRED BY CODE AND SHOWN ON THE DRAWINGS AND SHALL BE INSTALLED TO FACILITATE OPERATION, REPLACEMENT AND REPAIR.
2. PROVIDE ACCESS PANELS FOR CONCEALED VALVES BEHIND NON-REMOVABLE CEILINGS OR WALLS. WHEN CEILING OR WALL IS OF FIRE RATED CONSTRUCTION THE ACCESS PANEL SHALL HAVE EQUIVALENT FIRE RATING
3. PROVIDE SHUT-OFF VALVES ON SUPPLY PIPING TO INDIVIDUAL PIECES OF EQUIPMENT.
4. PROVIDE PIPE DOPE, TEFLON TAPE, WAX RINGS, NEOPRENE GASKETS AND OTHER JOINING COMPOUNDS AS REQUIRED BY BEST STANDARD PRACTICE AND ONLY ON SERVICE AS RECOMMENDED BY MANUFACTURER.

PIPE CLASS - A10 ITEM	3" AND SMALLER
PIPE	CPVC OR PEX
FITTING	SOLVENT WELD OR MECHANICAL JOINT
VALVES GATE	USE BALL VALVE
CHECK	200 PSI WORKING PRESSURE, ALL BRONZE, BRONZE DISC, SOLDER ENDS MILWAUKEE 1509, JENKINS 4093, STOCKHAM B-309
BALL	2 PIECE, PTFE SEATS, 250 PSI CW WORKING
DRAIN VALVE	600 WOG BALL VALVE, SWT X 3/4" HOSE, WITH GASKETED CAP AND CHAIN

PIPE CLASS - A10 ITEM	4" AND LARGER
PIPE	COPPER, TYPE L TUBING ASTM B8872
FITTINGS	MECHANICAL JOINT OR SOLDER JOINT WROUGHT COPPER SOFT
JOINTS	GROOVED, VIC #606 COUPLING OR SOLDER 95/5 LEAD FREE
UNIONS	MECHANICAL PIPE COUPLINGS, BOLTED TYPE CENTRAL CAVITY PRESS RESPONSIVE GASKET EQUAL TO VICTUALIC STYLE 606, COPPER TO COPPER FLANGED JOINT
VALVES GATE	125# CLASS, IRON BODY, OS&Y BRONZE MOUNTED FLANGED END, MILL WAUKEE F-2974-M, JERKINS 624-CSTOCKHAM G931
CHECK	200 PSI WORKING PRESSURE, IRON BODY, BRONZE MOUNTED, FLANGED, MILWAUKEE F-2974-M, JENKINS 624-CSTOCKHAM G931
BALL DRAIN VALVE	CAST IRON EPOXY COATED FULL PORT FLANGED BALL VALVE WITH STAINLESS STEEL BALL AND STEM STANDARD ANSI B16.1 FLANGE DIMENSIONS WATTS G-4000 FDA
BALANCING	BUTTERFLY VALVE, IRON FULL LUG BODY, BRONZE DISC, EPT REPLACEABLE LINER, SS STEM, 100 PSIG CWP-20 TO 200" F

NOTES:

WHEN COPPER COMES IN CONTACT WITH DISSIMILAR MATERIAL, PROVIDE DI-ELECTRIC COUPLINGS OR DIELECTRIC FLANGES. CONTACT BETWEEN FERROUS STD BOLTS AND BRONZE FLANGES SHALL BE ELECTRICALLY INSULATED WITH NON METALLIC WASHERS.

PROVIDE UNION CONNECTIONS TO ALL FIXTURES AND EQUIPMENT SUCH AS WATER HEATERS, PUMPS, ETC.

D10 PIPE CLASS	ABOVE GRADE
PIPE	SCHEDULE 40 PVC
FITTING	DRAINAGE PATTERN, TO SUIT PIPE MATERIAL
JOINTS	STEEL NO-HUB SOLVENT WELD JOINTS. USE PRIMER PER MANUFACTURE'S INSTRUCTIONS

2.3 INSULATION

A. INSULATION SHALL BE BY OWENS-CORNING, CERTAIN-TEED OR MANVILLE.

B. INSULATION SHALL BE INSTALLED BY INSULATION FIRM REGULARLY SPECIALIZING IN THIS WORK AND EMPLOYING MEN PARTICULARLY SKILLED THEREIN. NO COVERING APPLIED BY PLUMBER'S HELPERS WILL BE ACCEPTABLE.

C. INSULATION INSTALLATION SHALL MEET MANUFACTURER'S RECOMMENDATIONS. NO INSULATION SHALL BE APPLIED UNTIL PIPING HAS PASSED TESTS AS REQUIRED BY AUTHORITIES THAT HAVE JURISDICTION.

D. INSULATION, JACKETS AND ADHESIVES SHALL BE FLAME RETARDANT AND SHALL HAVE ASTM E-84 FIRE HAZARD RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED.

1. INTERIOR APPLICATIONS: (JACKETS)

a. TYPE A: VAPOR BARRIER JACKETS: KRAFT REINFORCED FOIL VAPOR BARRIER WITH SELF-SEALING ADHESIVE JOINTS. JACKET SHALL BE HEAVY-DUTY, FIRE RETARDANT MATERIAL WITH GLASS FIBER REINFORCING AND SELF-SEALING LAP. JACKET WILL BE FACTORY APPLIED TO THE INSULATION. JACKET SHALL HAVE NEAT, WHITE KRAFT FINISH OR WHITE VINYL SUITABLE FOR PAINTING, WITH BEAD PUNCTURE RESISTANCE OF 50 UNITS MINIMUM. VAPOR BARRIER SHALL BE .001" ALUMINUM FOIL ADHERED TO THE INNER SURFACE OF THE JACKET. PERMEANCE SHALL BE OWENS-CORNING FIBERGLASS-JS-SLOR MANVILLE FLAME S&E-T.

E. INSULATION AND JACKETING SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

1. TYPE A: GLASS FIBER INSULATION: ANSI/ASTM C547; "K" VALUE OF 0.24 AT 75F NONCOMBUSTIBLE. EXTERIOR RUNS SHALL HAVE CORRUGATED WET-PROOF JACKET AND HEAT TRACING.

F. SCHEDULE: REFER TO "PIPE INSULATION MATRIX" FOR THERMAL CONDUCTIVITY AND THICKNESS REQUIREMENTS. SEE THE PIPING SYSTEMS BELOW THAT REQUIRE INSULATION ALONG WITH THE ASSUMED OPERATING TEMPERATURE

1. DOMESTIC COLD WATER: 50 DEG
2. DOMESTIC HOT WATER: 120 DEG, 140 DEG (WHERE NOTED)
3. DOMESTIC HOT WATER RETURN: 105 DEG
4. HORIZONTAL STORM DRAINAGE: 40 DEG
5. SANITARY TRAPS (WHEN LOCATED IN UNCONDITIONED SPACE): 40 DEG

G. PIPE HANGERS SHALL BE OUTSIDE INSULATION AND SHALL INCORPORATE 12" 26 GAUGE PROTECTION SHIELDS. INSULATION ON PIPING THAT PASSES THROUGH WALLS OR PARTITIONS SHALL PASS CONTINUOUSLY THROUGH SLEEVES, EXCEPT AT FIRE WALLS, SMOKE PARTITIONS, AND FLOOR PENETRATIONS WHERE SPACE BETWEEN SLEEVES AND PIPING SHALL BE FIRE STOPPED WITH APPROVED PACKING.

2.4 PIPE SUPPORTS

A. PROVIDE ADJUSTABLE CLEVIS HANGERS FOR HANGER SIZES 4" AND LARGER AND CAST BRASS BAND TYPE HANGERS FOR SMALLER. SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PAGE LINES, PREVENT VIBRATION, SECURE PIPING IN PLACE, AND PROVIDE FOR EXPANSION AND CONTRACTION. HANGERS ON ALL INSULATED PIPE SHALL BE CLEVIS TYPE.

B. PROVIDE VERTICAL BRACKETS AND GUIDES FOR HORIZONTAL PIPING WHERE IT IS RACKED ALONG WALLS. TRAPEZE HANGERS MAY BE USED WHERE CONDITIONS PERMIT. PROVIDE ALL NECESSARY PIPE CLIPS, ANCHORS AND SUNDRIES FOR PROPER ALIGNMENT AND SUPPORT OF PIPING SYSTEM. HANGERS FOR COPPER PIPING SHALL BE COPPER OR BRONZE OR SHALL BE COATED FOR DIELECTRIC ISOLATION.

C. HANGER RODS SHALL HAVE MACHINE THREADS. BEAM CLAMPS, CONCRETE INSERTS AND EXPANSION SHIELDS SHALL BE PROVIDED AS REQUIRED. NO RAMSET OR SHOT SHIELDS WILL BE ALLOWED.

D. HANGER SPACING SHALL MEET REQUIREMENTS OF STATE AND LOCAL PLUMBING CODES. IN NO CASE SHALL HORIZONTAL PIPING BE SUPPORTED AT INTERVALS GREATER THAN 10'-0

E. PIPING BELOW BASEMENT OR LOWEST LEVEL SLAB (THAT IS, BURIED PIPING) NEED NOT BE SUPPORTED FROM STRUCTURE IF SLAB IS NOT DESIGNED AS STRUCTURAL SLAB. THE PLUMBING CONTRACTOR SHALL SUPPORT ALL PIPING UNDER STRUCTURAL SLABS ON GRADE.

F. PIPE SUPPORTS SHALL NOT BEAR ON SLEEVES.

G. HORIZONTAL PIPING SHALL BE SUSPENDED FROM BUILDING STRUCTURE BY MILD STEEL ROD CONNECTING PIPE HANGER TO INSERTS, BEAM CLAMPS, ANGLE BRACKETS AND LAG SCREWS AS REQUIRED BY BUILDING CONSTRUCTION IN ACCORDANCE WITH THE FOLLOWING:

ROD SIZE	PIPE SIZE
3/8"	1/2" TO 2"
1/2"	2 1/2" - 4"
5/8"	4" - 8"

H. HANGERS ON INSULATED LINES SHALL BE SIZED TO FIT THE OUTSIDE DIAMETER OF PIPE INSULATION. PROVIDE HANGERS FOR INSULATED PIPING WITH 126 GAUGE GALVANIZED INSULATION SHIELDS.

I. PIPING AT EQUIPMENT AND CONTROL VALVES SHALL BE SUPPORTED TO PREVENT STRAINS OR DISTORTIONS IN CONNECTED EQUIPMENT AND CONTROL VALVES. PIPING AT EQUIPMENT SHALL BE SUPPORTED TO ALLOW FOR REMOVAL OF EQUIPMENT, VALVES, AND ACCESSORIES WITH A MINIMUM OF DISMANTLING AND WITHOUT REQUIRING ADDITIONAL SUPPORT AFTER THESE ITEMS ARE REMOVED.

J. PIPING INSTALLED UNDER THIS DIVISION SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE BY MEANS OF BEAM ATTACHMENTS AND NOT FROM PIPING, DUCTWORK, OR CONDUIT OF OTHER TRADES. SUPPLEMENTARY STEEL, INCLUDING FACTORY-FABRICATED CHANNELS REQUIRED TO MEET THE REQUIREMENTS SPECIFIED HEREIN, SHALL BE PROVIDED BY THE PLUMBING CONTRACTOR.

K. MAXIMUM SPACING OF HANGERS ON RUNS OF STEEL, COPPER OR BRASS PIPE SHALL BE AS FOLLOWS:

L. SCHEDULE - HANGER SPACING IN FEET/PIPE MATERIAL

PIPE SIZE (INCHES)	STEEL (FEET)	COOPER OR BRASS (FEET)
1/2" = 1"	7	5
1 1/4" = 3"	10	6
4" = 8"	10	8"

2.5 SLEEVES AND PENETRATIONS

A. PIPE SLEEVES

1. SLEEVES THROUGH WALLS AND THROUGH STRUCTURAL AND FIRE-RATED CONSTRUCTION SHALL BE HOT-DIPPED GALVANIZED SCHEDULE 40 STEEL. SLEEVES SHALL EXTEND 1" BEYOND WALL. SLEEVES THROUGH PARTITIONS AND NON-FIRE-RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS, OR APPROVED FIRE RETARDANT, PLASTIC PIPE.

B. PIPE SLEEVE PACKING

1. PACKING BETWEEN THE PIPE AND THE SLEEVE (OR WALL OR SLAB OPENING) IN FIRE-RATED WALLS, PARTITIONS OR SLABS SHALL BE A COMBINATION OF FIREPROOF INSULATION AND FIREPROOF CAULK. THE COMBINATION OR MATERIALS SHALL HAVE THE SAME FIRE RATING IN HOURS AS THE WALL OR SLAB, AS TESTED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM E-119. THE COMBINATION OF MATERIALS SHALL BE CLASSIFIED BY UL, (FILL, VOID OR CAVITY MATERIALS) FOR THE FIRE RATING REQUIRED AND SHALL BE LISTED AS A NUMBERED SYSTEM IN THE UL BUILDING MATERIALS DIRECTORY. FIBERGLASS SHALL NOT BE USED AS THE INSULATION MATERIAL.

2. ACCEPTABLE FIREPROOF INSULATION MATERIALS SHALL BE: KAOLIN (KAOWOOL BY BABCOCK AND WILCOX); CERAMIC FIBER BLANKET (FIBERFRAX BY STANDARD OIL) OR FIRE-RATED CAULKS SHALL BE: SILICONE (FIRESTOP BY DOW CORNING); CERAMIC FIBER (FYREPUTTY BY STANDARD OIL) OR INTUMESCENT SYNTHETIC ELASTOMER (FIRE BARRIER CAULK BY 3M).

3. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OR FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBRE OR MINERAL FIBER WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN 1" OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.

4. ALL MATERIALS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS; ALL GAPS MUST BE SEALED. FINISH CAULK FLUSH WITH WALL OR SLAB SURFACE IF PIPING RUNS EXPOSED.

C. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBRE OR MINERAL FIBRE WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN 1" OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.

2.6 CLEANOUTS

A. PROVIDE CLEANOUTS IN, WASTE DRAINAGE PIPING ON STRAIGHT RUNS AT CHANGES IN DIRECTIONS, AND OTHER POINTS WHERE REQUIRED BY INSPECTING AUTHORITIES. CLEANOUTS SHALL SUIT CONSTRUCTION IN WHICH THEY ARE TO BE INSTALLED.

B. MAXIMUM HORIZONTAL DISTANCE ON STRAIGHT RUNS BETWEEN CLEANOUTS IN PIPING 4" AND SMALLER SHALL BE 50 FEET.

C. CLEANOUTS SHALL BE SAME SIZE AS PIPE 4" AND SMALLER.

D. CLEANOUTS SHALL OPEN IN DIRECTION OF FLOW OF DRAINAGE LINE SERVED OR AT RIGHT ANGLES, THERETO.

E. KEEP CLEANOUT PLUGS CLEAN AND UNIMPEDED. PREVENT COVERING WITH CEMENT, PLASTER OR OTHER PERMANENT FINISHING MATERIALS.

PART 3 - EXECUTION

3.1 EXPANSION PROVISIONS

A. ALLOW FOR EXPANSION WITH OFFSETS, LOOPS, SWING JOINTS, EXPANSION JOINTS, AND OTHER MEANS, WHERE NECESSARY TO PROTECT PIPING SYSTEMS AS SHOWN. TAKE-OFFS FROM MAINS TO RUN OUTS SHALL NOT HAVE LESS THAN THREE ELBOW SWING.

B. ANCHOR MAINS AND RISERS WITH LOOPS OR OFFSETS TO STRUCTURE TO IMPART EXPANSION TOWARDS LOOPS AND OFFSETS. ANCHORS SHALL BE FORGED WROUGHT IRON, SECURED TO PIPE AND STRUCTURE. PROVIDE VIBRATION ISOLATION AS REQUIRED AND AS SPECIFIED.

C. PROVIDE PIPE ALIGNMENT GUIDES TO GUIDE EXPANDING PIPE TO MOVE FREELY FROM ANCHOR POINTS TOWARD EXPANSION JOINTS, OFFSETS, AND OTHER EXPANSION PROVISIONS.

3.4 JOINTS AND CONNECTIONS

A. JOINTS AND CONNECTIONS SHALL BE PERMANENT AND SHALL BE GAS AND WATER TIGHT. JOINTING SHALL BE TYPES SPECIFIED FOR SERVICE INDICATED. JOINTS AND CONNECTIONS SHALL MEET REQUIREMENTS OF MANUFACTURERS BEST RECOMMENDED PRACTICE. ALL TRANSITIONS BETWEEN DIFFERENT PIPING MATERIALS SHALL BE MADE USING APPROVED ADAPTERS. ADAPTERS FOR TRANSITIONS BETWEEN TWO TYPES OF PIPING MATERIALS SHALL BE MANUFACTURED FOR PURPOSE INTENDED.

3.5 INTERIOR WATER SUPPLY SYSTEM

A. PROVIDE DOMESTIC COLD WATER PIPING SYSTEMS AS INDICATED ON DRAWINGS AND AS SPECIFIED, INCLUDING SUPPLIES TO INDICATED EQUIPMENT. PIPING SHALL BE PITCHED AT LEAST 1" IN 40 FEET SO THAT IT CAN BE DRAINED COMPLETELY AT LOW POINTS WITH DRAIN VALVES. PIPING SHALL BE PITCHED UP TOWARD FIXTURES FOR PROPER AIR RELIEF. PROVIDE AUTOMATIC AIR VENTS WITH OUTLET PIPED TO FLOOR AND BALL VALVE AHEAD OF AIR VENTS, WHERE OFFSETS CANNOT BE VENTED BY MEANS OF FIXTURE CONNECTIONS.

1. PIPE USED IN PIPING ASSEMBLY SHALL BE CLEAN AND SHALL HAVE ENDS SQUARED AND REAMED BEFORE PUTTING INTO FITTINGS.
2. CUT TUBE TO REQUIRED LENGTH WITH HACKSAW OR TUBE CUTTER DESIGNED FOR COPPER WORK.
3. REMOVE BURRS FROM INSIDE AND OUTSIDE OF CUT EDGE AND CLEAN END OF TUBE WITH STEEL WOOL OR SAND CLOTH UNTIL DISCOLORATION IS REMOVED AND METAL IS SMOOTH AND BRIGHT.
4. OXIDES SHALL BE REMOVED BY SAND CLOTH AND BRUSH.
5. REMOVAL OF OXIDES OR DISCOLORATION OF PIPE AND FITTINGS USE OF ACIDS OR SELF-CLEANING FLUX IS FORBIDDEN.
6. APPLY A THIN, UNIFORM, AND COMPLETE COATING OF RELIABLE BRAND OF SOLDERING FLUX (NOKORODE OR CREST) TO CLEANED SURFACES OF TUBE AND FITTINGS.
7. WHEN JOINTS ARE SOLDERED, REMOVE EXCESS SOLDER WITH A CLOTH OR BRUSH LEAVING A FILLET OF SOLDER IN CHAMBER AT END OF THE FITTING.
8. CONNECTIONS TO EQUIPMENT SHALL BE MADE WITH UNIONS.
9. SHUT-OFF AND CONTROL VALVES ON MAIN DISTRIBUTION AND BRANCH LINES SHALL BE LOCATED FOR EASY ACCESS AND OPERATION. BRANCH PIPING SHALL BE VALVED WITH ACCESS PANELS PROVIDED AS REQUIRED AT LOCATIONS SHOWN ON DRAWINGS, AND DETERMINED IN FIELD.

3.6 INTERIOR SANITARY WASTE AND VENT PIPING

A. PROVIDE WASTE LINES SHOWN IN BUILDING AS SHOWN ON DRAWINGS. PIPING SHALL BE ASSEMBLED AND INSTALLED WITHOUT UNDUE STRAINS AND STRESSES, AND PROVISION SHALL BE MADE FOR EXPANSION, CONTRACTION AND STRUCTURAL SETTLEMENT.

B. INTERIOR HORIZONTAL WASTE PIPING SHALL BE INSTALLED IN PRACTICAL ALIGNMENT AT UNIFORM GRADE OF AT LEAST 1/8" PER FOOT BUT 1/4" PER FOOT WHERE POSSIBLE, AND AS SHOWN ON DRAWINGS.

C. PROVIDE SLEEVES FOR PIPE THAT PASS THROUGH WALLS.

D. PROVIDE 2" AIR GAP ON EQUIPMENT AND DRAINS THAT DISCHARGE TO INDIRECT WASTE RECEPTORS.

E. PIPING SHALL BE RUN STRAIGHT AND PLUMB AND OFFSETS SHALL BE MADE AT AN ANGLE OF NO LESS THAN 45.

3.7 TESTING OF PIPING SYSTEMS

A. GENERAL

1. PIPING SYSTEMS SHALL BE SUBJECTED TO TESTING WATER OR AIR AS NOTED AND SHALL HOLD TIGHT AT THE PRESSURE HEAD STATED FOR THE TIME INTERVAL REQUIRED WITHOUT ADDING AIR OR WATER. WHILE ANY SYSTEM IS BEING TESTED, REQUIRED HEAD OR PRESSURE SHALL BE MAINTAINED UNTIL JOINTS ARE INSPECTED.

2. TESTS SHALL BE WITNESSED BY INSPECTOR HAVING JURISDICTION AND THE ARCHITECT WITH 48-HOUR NOTICE GIVEN THESE AUTHORITIES.

3. EQUIPMENT, MATERIAL AND LABOR REQUIRED FOR TESTING OF VARIOUS SYSTEMS OR PART THEREOF SHALL BE PROVIDED BY PLUMBING CONTRACTOR.

B. WASTE SYSTEM

1. WATER TEST SHALL BE APPLIED TO DRAINAGE SYSTEMS EITHER IN THEIR ENTIRETY OR IN DIVISIONS AS REQUIRED, AFTER ROUGH PIPING HAS BEEN INSTALLED.

2. IF APPLIED TO ENTIRE SYSTEM, OPENINGS IN PIPING SYSTEM SHALL BE TIGHTLY CLOSED, EXCEPT THE HIGHEST OPENING, AND SYSTEM FILLED WITH WATER TO POINT OF OVERFLOW.

3. IF SYSTEM IS TESTED IN DIVISIONS, EACH OPENING SHALL BE TIGHTLY CLOSED EXCEPT HIGHEST OPENING IN THE DIVISION UNDER TEST, AND EACH DIVISION SHALL BE FILLED WITH WATER BUT NO DIVISION SHALL BE TESTED WITH LESS THAN A 10' HEAD OF WATER.

4. IN TESTING SUCCESSIVE DIVISIONS, AT LEAST UPPER 10' OF NEXT PRECEDING DIVISION SHALL BE TESTED SO THAT NO JOINT OF PIPING IN BUILDING, EXCEPT THE UPPERMOST 10' OF THE SYSTEM SHALL BE SUBMITTED TO A TEST OF LESS THAN A 10' HEAD OF WATER.

5. WATER SHALL BE KEPT IN SYSTEM FOR AT LEAST 15 MINUTES BEFORE INSPECTION STARTS; THE SYSTEM SHALL THEN BE MADE TIGHT AT ALL POINTS.
6. PRESSURE TEST PIPING IF REQUIRED BY AUTHORITIES HAVING JURISDICTION.

C. POINTS OF DRAINAGE SYSTEMS TESTED WITH AIR INSTEAD OF WATER SHALL BE TESTED BY ATTACHING AN AIR COMPRESSOR TESTING APPARATUS TO SUITABLE OPENING AND, AFTER CLOSING ALL OTHER INLETS OR OUTLETS, FORCING AIR INTO SYSTEMS UNTIL A UNIFORM GAUGE PRESSURE OF 5 PSI OR SUFFICIENT PRESSURE TO BALANCE A COLUMN OF MERCURY 10" HIGH. PRESSURE SHALL BE HELD WITHOUT INTRODUCTION OF ADDITIONAL AIR FOR A PERIOD OF AT LEAST 10 MINUTES.

D. TESTING SUMMARY

1. W & V - WITH WATER TO A 10 FOOT HEAD FOR 30 MINUTES.
2. WATER - WITH POTABLE WATER TO 150 PSI FOR ONE HOUR.

E. DEFECTIVE WORK: IF INSPECTION OR TESTS SHOW DEFECTS, SUCH DEFECTIVE WORK OR MATERIAL SHALL BE REPLACED AND INSPECTION AND TESTS SHALL BE REPEATED. REPAIRS T O PIPING SHALL BE MADE WITH NEW MATERIAL. NO CAULKING OF SCREWED JOINTS OR HOLES SHALL BE ACCEPTABLE.

F. ADDITIONAL TESTS

1. PROVIDE ADDITIONAL TESTS SUCH AS SMOKE PRESSURE TESTS AS REQUIRED BY REGULATIONS OR AS DIRECTED BY AUTHORITIES MAKING THE INSPECTION.
2. PROVIDE FOR ANY REPEATED TEST AS DIRECTED BY THE ARCHITECT, TO MAKE ALL SYSTEMS TIGHT AS REQUIRED.
3. VISUAL INSPECTIONS OF JOINTS AND VALVES SHALL BE MADE AS DIRECTED BY THE ARCHITECT.

3.9 CLEANING

A. CLEAN SYSTEMS THOROUGHLY BEFORE TESTING. FIXTURES, EQUIPMENT, PIPE, VALVES AND FITTINGS SHALL BE FREE OF GREASE, METAL CUTTINGS, DIRT AND OTHER FOREIGN MATERIAL. REMOVE PROTECTIVE COVERS. FIXTURES (INCLUDING LAVATORIES, WATER CLOSETS AND URINALS) SHALL BE CLEANED AND READY FOR USE.

B. REPAIR STOPPAGE, DISCOLORATION AND DAMAGE TO PARTS OF BUILDING, FINISH AND FURNISHINGS DUE TO FAILURE TO PROPERLY CLEAN PIPING SYSTEM WITHIN CONTRACT PRICE.

C. AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACE OF EQUIPMENT INCLUDED IN THIS DIVISION, INCLUDING CONCRETE RESIDUE.

3.10 DISINFECTION OF WATER SYSTEMS INTERIOR

A. WATER PIPING SYSTEMS SHALL BE THOROUGHLY DISINFECTED WITH A SOLUTION CONTAINING NO LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE. CHLORINATING MATERIALS SHALL BE EITHER LIQUID CHLORINE OR SODIUM HYPOCHLORITE SOLUTION, SHALL BE INTRODUCED INTO THE SYSTEM AND DRAWN TO ALL POINTS IN THE SYSTEM. DISINFECTION SOLUTION SHALL BE ALLOWED TO REMAIN IN SYSTEM FOR 24 HOURS, DURING THIS TIME, VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER DISINFECTION, SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL RESIDUAL CHLORINE CONTENT IS NO GREATER THAN 0.2 PARTS PER MILLION.

3.11 IDENTIFICATION

- A. PIPING SYSTEM IDENTIFICATION LABELS - INSTALL LABELS ON PIPING IDENTIFYING SYSTEM TYPE. INSTALL LABELS ON PIPING EVERY 20 FEET.
- B. DIRECTION OF FLOW LABEL - INSTALL LABELS ON PIPING INDICATING DIRECTION OF FLOW OF PIPING CONTENTS.
- C. VALVE IDENTIFICATION SIGNS INSTALL BRASS IDENTIFICATION TAGS W/CHAINS ON VALVES. PROVIDE VALVE TAG CHART IDENTIFYING VALVE NUMBER, LOCATION AND SYSTEM TYPE.



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