

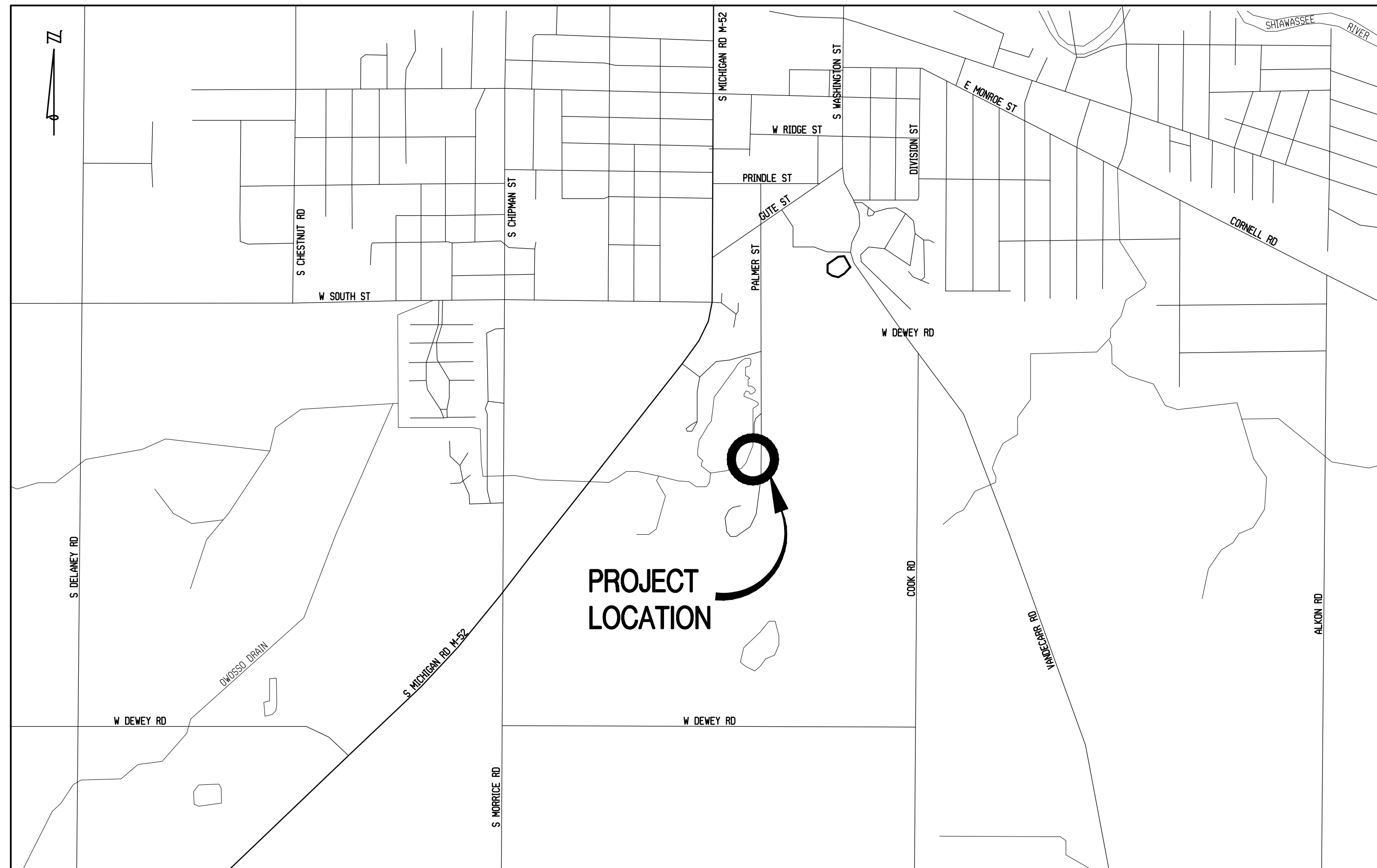
INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
C-1	COVER SHEET
C-2	NOTES
C-3	EXISTING CONDITIONS
C-4	REMOVAL PLAN
C-5	SITE LAYOUT PLAN
C-6	SITE GRADING PLAN
C-7	RAW WATER MAIN PLAN AND PROFILE
C-8	SOIL EROSION AND SEDIMENTATION CONTROL PLAN
C-9	SITE DETAIL SHEET
C-10	SITE DETAIL SHEET
C-11	CITY OF OWOSSO - WATER MAIN STANDARD DETAILS
S-1	STRUCTURAL NOTES AND SYMBOLS
S-2	FOUNDATION PLAN, FRAMING PLAN AND DETAILS
A-1	WELLHOUSE PLANS AND GENERAL INFORMATION
A-2	WELLHOUSE ELEVATIONS AND SECTIONS
A-3	WELLHOUSE SCHEDULES AND DETAILS
P-1	PROCESS SITE PLAN AND SECTION
P-2	PROCESS DETAILS
M-1	MECHANICAL & PLUMBING NOTES AND DETAILS
M-2	PALMER BLDG FLOOR PLAN
E-1	GENERAL ELECTRICAL INFORMATION
E-2	ELECTRICAL SITE PLAN
E-3	FIRST FLOOR - PALMER 3A BLDG LIGHTING PLAN
E-4	FIRST FLOOR - PALMER 2 & 3A BLDG POWER PLAN
E-5	ELECTRICAL DETAILS & SCHEDULES

# CITY OF OWOSSO

## PALMER 3A WELL HOUSE DESIGN

### SHIAWASSEE COUNTY, MICHIGAN

### DWSRF PROJECT NUMBER 7491-01



**LOCATION MAP**  
N.T.S.

PREPARED UNDER THE SUPERVISION OF:

PERSON IN CHARGE OF: ARCHITECTURAL	PERSON IN CHARGE OF: SITE CIVIL	PERSON IN CHARGE OF: ELECTRICAL	PERSON IN CHARGE OF: MECHANICAL	PERSON IN CHARGE OF: PROCESS	PERSON IN CHARGE OF: STRUCTURAL
SEAL:	SEAL:	SEAL:	SEAL:	SEAL:	SEAL:

THE IMPROVEMENTS BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SUPPLEMENTAL SPECIFICATIONS. THE PROPOSED IMPROVEMENTS COVERED BY THESE PLANS ARE DESIGNED IN ACCORDANCE WITH THE AASHTO; A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2011 EDITION AND SECTION B (3R) OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION LOCAL AGENCY PROGRAMS FOR GEOMETRICS ON LOCAL AGENCY PROJECTS, 2014 EDITION.

ALL TRAFFIC CONTROL TEMPORARY AND PERMANENT SHALL FOLLOW 2011 EDITION OF MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).

THE MATERIAL AND METHODS FOR WATER MAIN CONSTRUCTION CONFORM TO THE STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA) AND THE MICHIGAN SAFE DRINKING WATER ACT 1976 PA 399, AS AMENDED, AND THE ADMINISTRATIVE RULES.

CONTRACT FOR: THIS PROJECT INCLUDES DEMOLITION AND REMOVAL OF EXISTING WELL HOUSE, ABANDON EXISTING WELL, CONSTRUCT NEW WELL HOUSE AT EXISTING PALMER 3A WELL LOCATION, CHAIN-LINK WITH BARBED WIRE SECURITY FENCING, GRAVEL ACCESS DRIVE, RE-ROUTE EXISTING GAS AND ELECTRIC UTILITIES, INSTALL BACK-UP GENERATOR AND 78 FEET OF 12" CEMENT LINED DUCTILE IRON RAW WATER MAIN.

THESE PLANS WERE PREPARED FOR THE CITY OF OWOSSO BY:



Advancing Communities  
201 E Ellsworth St, Unit 100 | Midland, MI 48640  
P (989) 956-2020

ISSUE: ISSUED FOR BID 12/01/2022  
REVISIONS

PROJECT NO. 0020220070	SHEET NO. 1 OF 25
---------------------------	----------------------



## GENERAL PROVISIONS

THE MATERIAL AND METHODS FOR WATER MAIN CONSTRUCTION CONFORM TO THE STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA) AND THE MICHIGAN SAFE DRINKING WATER ACT 1976 PA 399, AS AMENDED, AND THE ADMINISTRATIVE RULES.

THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) 2020 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION EXCEPT AS NOTED HEREIN AND IN THE PROPOSAL BOOK.

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES FOR NOISE LEVELS, VIBRATIONS, OR ANY OTHER RESTRICTIONS WHILE REMOVING PAVEMENT OR FOR ANY OTHER CONSTRUCTION OPERATIONS WITHIN THIS CONTRACT TO BE INCLUDED IN THE RESPECTIVE ITEM OF WORK.

THE CONTRACTOR SHALL NOT ENTER UPON PRIVATE PROPERTY FOR ANY PURPOSE WITHOUT OBTAINING WRITTEN PERMISSION, NOTIFYING THE ENGINEER, AND HE/SHE SHALL BE RESPONSIBLE FOR PRESERVATION OF ALL PUBLIC PROPERTY, TREES, MONUMENTS, ETC. ALONG AND ADJACENT TO THE STREET AND/OR RIGHT OF WAY, AND SHALL USE EVERY PRECAUTION NECESSARY TO PREVENT DAMAGE OR INJURY THERETO. HE/SHE SHALL USE SUITABLE PRECAUTIONS TO PREVENT DAMAGE TO PIPES, CONDUITS, AND OTHER UNDERGROUND STRUCTURES AND SHALL PROTECT CAREFULLY FROM DISTURBANCE OR DAMAGE ALL MONUMENTS AND PROPERTY MARKERS UNTIL THE ENGINEER OR AUTHORIZED AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION AND SHALL NOT REMOVE THEM UNTIL DIRECTED.

THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE ENGINEER, LOCAL FIRE, POLICE, HOSPITAL, AND EMERGENCY AGENCIES 72 HOURS IN ADVANCE OF PROPOSED ROAD CLOSURES.

THE CONTRACTOR AND/OR HIS SUBCONTRACTOR SHALL NOTIFY "MISS DIG", LOCAL SEWER, FIRE AND POLICE DEPARTMENTS 72 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

## UTILITIES

THE FOLLOWING UTILITY COMPANIES HAVE FACILITIES WITHIN THE PROJECT LIMITS:

### TELEPHONE/FIBER

FRONTIER COMMUNICATIONS  
MARK STEVENS  
1943 W. M-21  
OWOSSO, MI 48867  
(989) 723-0373  
Mark.Stevens@ftr.com

### FIBER

DAYSTARR COMMUNICATIONS  
BRENT KLEIN  
307 N. BALL STREET  
OWOSSO, MI 48867  
(989) 720-6000  
Brent.Klein@daystarrfiber.net

### CABLE TV

CHARTER COMMUNICATIONS  
MARK KELLY  
1480 S. VALLEY CENTER DRIVE  
BAY CITY, MI 48706  
(989) 233-9404  
Mark.Kelly@charter.com

### WATER AND SEWER

CITY OF OWOSSO  
RYAN SUCHANEK  
301 WEST MAIN STREET  
OWOSSO, MI 48867  
(989) 725-0555  
Ryan.Suchanek@ci.owosso.mi.us

### SOIL EROSION CONTROL

SHIAWASSEE COUNTY HEALTH DEPT.  
ENVIRONMENTAL HEALTH DIVISION  
CASEY ELLIOT, REHS  
201 N. SHIAWASSEE STREET  
CORUNNA, MI 48817  
(989) 743-2289  
celliot@shiaswasseechd.net

FOR THE PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CONTRACT THE MISS DIG SYSTEM, INC. BY PHONE AT 811 OR 800-482-7171 OR VIA THE WEB AT EITHER ELOCATE.MISSDIG.ORG FOR SINGLE ADDRESS OR RTE.MISSDIG.ORG, A MINIMUM OF 3 BUSINESS DAYS PRIOR TO EXCAVATION, EXCLUDING WEEKENDS AND HOLIDAYS.

THE UTILITIES AND THEIR LOCATIONS ARE SHOWN ON THE PLANS ARE DEEMED ACCURATE BUT NOT GUARANTEED. THE CONTRACTOR SHALL CALL THE MISS DIG 3 WORKING DAYS BEFORE BEGINNING WORK.

GAS FACILITIES SHALL BE PROTECTED AND SUPPORTED PER THE FACILITIES OWNER STANDARDS.

THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.

THE CONTRACTOR SHALL BE AWARE OF AND USE CAUTION WHEN WORKING NEAR UNDERGROUND OR OVERHEAD LINES OF ALL UTILITIES WITHIN THE PROJECT AREA.

## MAINTAINING TRAFFIC/TRAFFIC CONTROL

THE CONSTRUCTION INFLUENCE AREA (CIA) SHALL CONSIST OF THE WIDTH OF THE PROPOSED RIGHT-OF-WAY FROM THE PROJECT POINT OF BEGINNING TO THE POINT OF ENDING, CONNECTING SIDE STREETS, AND A SUFFICIENT DISTANCE BEFORE AND AFTER THE PROJECT TO WARN MOTORISTS OF THE CONSTRUCTION AHEAD.

THE CONTRACTOR SHALL MAINTAIN THE PEDESTRIAN ACCESS THROUGHOUT THE ENTIRE PROJECT AT ALL TIMES DURING CONSTRUCTION. AREAS OF SIDEWALK THAT ARE SHOWN TO BE REMOVED AND REPLACED SHALL BE MAINTAINED WITH A TEMPORARY HARD SURFACE. PEDESTRIAN ACCESS TO ALL RESIDENCES AND BUSINESSES SHALL BE ALLOWED AT ALL TIMES DURING CONSTRUCTION.

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER THAT LOCAL TRAFFIC AND EMERGENCY VEHICLES SHALL HAVE ACCESS WITHIN THE PROJECT AT ALL TIMES IN A MANNER APPROVED BY THE ENGINEER. ALL EMERGENCY RESPONSE, ROAD COMMISSION, MUNICIPALITIES, SCHOOL BUS GARAGES, OR OTHER NECESSARY AGENCIES SHALL BE NOTIFIED A MINIMUM OF THREE DAYS IN ADVANCE OF IMPLEMENTING ANY TEMPORARY ROAD CLOSURE. THIS SHALL BE INCLUDED IN THE COST OF THE PROJECT.

MAINTENANCE GRAVEL (TON) FOR MAINTAINING LOCAL TRAFFIC HAS BEEN INCLUDED IN THE PROJECT TO BE USED AS DIRECTED BY THE ENGINEER TO MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC ALONG THE PROJECT, DRIVEWAYS, AND STREET APPROACHES.

THE CONTRACTOR SHALL SCHEDULE WORK BETWEEN THE HOURS OF 7:00 A.M. AND 7:00 P.M., MONDAY THROUGH SATURDAY. NO WORK IS ALLOWED SUNDAYS OR NATIONAL HOLIDAYS. NO WORK IS ALLOWED OUTSIDE THESE TIME PERIODS. THE CONTRACTOR SHALL COORDINATE WORK SO THAT ANY NECESSARY PRELIMINARY OR CLOSING OPERATIONS ARE ALSO DONE WITHIN THESE TIME PERIODS.

## SAWCUTTING

PAYMENT FOR SAWCUTTING REQUIRED THROUGHOUT THIS PROJECT SHALL BE INCLUDED IN REMOVAL ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

## REMOVALS

- REMOVALS SHALL BE DONE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- SAW CUTTING FOR PAVEMENT REMOVAL AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER SHALL BE TO THE DEPTH REQUIRED FOR NEAT REMOVAL OF PAVEMENT OR CONCRETE.
- SAW CUTTING DEPTH SHALL BE ADEQUATE TO PREVENT SPALLING, CHIPPING, OR DAMAGE TO EXISTING PAVEMENT EDGES LEFT IN PLACE AS DIRECTED.
- ANY ADDITIONAL TREE REMOVALS, CLEARING, GRADING, ETC. NEEDED FOR THE CONTRACTOR'S STAGING AND/OR WORK OPERATIONS SHALL BE COMPLETED AND AREA RESTORED TO THE SATISFACTION OF THE OWNER WITHOUT ADDITIONAL COMPENSATION.
- ADDITIONAL WORK OUTSIDE OF THE LIMITS AS SHOWN ON THE PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO STARTING THE ADDITIONAL WORK.
- PAVEMENTS, SOILS, AND OTHER REMOVED MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF AT AN OFF SITE LOCATION OR LICENSED WASTE FACILITY. ANY MANIFESTING OR CLASSIFICATION OF MATERIALS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, WITH COMPLETE RECORDS SUBMITTED TO THE OWNER'S REPRESENTATIVE AS REQUESTED.

## EARTHWORK

EARTHWORK QUANTITIES ARE ESTIMATED BY THE AVERAGE END AREA METHOD BASED UPON GROUND SURVEY INFORMATION. ALL EARTHWORK ITEMS WILL BE INCLUDED IN THE EXCAVATION AND EMBANKMENT PAY ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

ALL EXCAVATION UNDER OR WITHIN 5 FEET OF THE PAVEMENT SECTION SHALL BE BACKFILLED AND COMPACTED WITH GRANULAR MATERIAL, CLASS II WITHIN THE PAVED SECTION AND A 1:1 INFLUENCE OUTSIDE THE PAVED SECTION.

THROUGHOUT THE DURATION OF CONSTRUCTION, NO UNDERCUTS WILL BE LEFT OVERNIGHT NEXT TO THE EDGE OF THE TRAVELED WAY.

EXCAVATION OF TRENCHES OVER 5' DEEP WITHIN 10' OF THE EDGE OF THE TRAVELED PAVEMENT SHALL NOT BE LEFT OPEN OVERNIGHT.

BACKFILL BEHIND ALL PROPOSED CURB IN ACCORDANCE WITH THE MDOT STANDARD SPECIFICATIONS OF CONSTRUCTION. WORK IS INCLUDED IN THE EMBANKMENT PAY ITEM.

## AGGREGATE CONSTRUCTION

- AGGREGATE USED FOR PAVEMENT BASE SHALL MEET THE REQUIREMENTS OF SECTION 902 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SHALL BE MDOT CLASS 21AA OR AS APPROVED BY THE ENGINEER.
- AGGREGATE BASE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH SECTION 302 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

## CONCRETE CONSTRUCTION

- CONCRETE USED FOR CURB AND SIDEWALK SHALL MEET THE REQUIREMENTS OF SECTION 1004 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- CONCRETE PAVEMENT CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH SECTION 602 AND 1004 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- CONCRETE SIDEWALKS SHALL BE CONSTRUCTED ACCORDING TO MDOT STANDARD DETAIL R-29 SERIES.
- EXPANSION JOINTS WITH EXPANSION FILLER SHALL BE PLACED WHERE THE CONCRETE PAVEMENT ABUTS AN EXISTING PAVED SURFACE OR BUILDING OR AS DIRECTED BY THE ENGINEER.
- PROPOSED SIDEWALK CUT JOINTS SHALL BE CONSTRUCTED TO DIVIDE THE SIDEWALK INTO APPROXIMATELY 25 SQUARE FOOT AREAS OR AS DIRECTED BY THE ENGINEER.
- ALL SIDEWALKS AND BARRIER FREE RAMPS SHALL BE CONSTRUCTED WITH A MAXIMUM 1:48 CROSS-SLOPE AND A MAXIMUM 1:12 LONGITUDINAL SLOPE.
- ALL SIDEWALKS EXCEEDING THE MAXIMUM LONGITUDINAL SLOPE SHALL BE PROVIDED WITH HAND RAILS ON BOTH SIDES AS DIRECTED BY THE ENGINEER.
- SIDEWALK CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MDOT STANDARD PLAN R-28 SERIES.

## EXISTING WATER MAINS AND SEWERS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERLY IDENTIFIED EXISTING WATER MAINS AND/OR EXISTING SEWERS DURING THE CONSTRUCTION OF THIS PROJECT.

## RESTORATION

- THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS UPON COMPLETION OF THE PROJECT.
- ALL DISTURBED AREAS SHALL BE BROUGHT TO FINAL GRADE AND STABILIZED AS SOON AS POSSIBLE AFTER BEING DISTURBED. PERMANENT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED WITHIN FIVE CALENDAR DAYS OF COMPLETING FINAL GRADING.
- ALL PERMANENT SLOPES STEEPER THAN 4:1 SHALL BE STABILIZED USING MULCH BLANKETS AS LISTED ON THE PLANS.
- CONTRACTOR SHALL PLACE 3" OF TOPSOIL, SEED AND MULCH AS INDICATED ON ALL DISTURBED AREAS NOT UNDER PAVEMENT OR OTHERWISE LABELED.
- ALL FILL SHALL BE CLEAN INERT MATERIAL.

## SOIL EROSION MEASURES

APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO EARTH-DISTURBING ACTIVITIES. PLACE TURF ESTABLISHMENT ITEMS AS SOON AS POSSIBLE ON POTENTIAL ERODABLE SLOPES AS DIRECTED BY THE ENGINEER.

ALL SOIL EROSION AND SEDIMENTATION MUST BE CONTROLLED AND CONTAINED ON SITE.

SOIL EROSION AND SEDIMENTATION CONTROL: IN ADDITION TO THE GENERAL SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS IN THE PROPOSAL, THE FOLLOWING MEASURES SHALL BE INCORPORATED INTO THIS PROJECT:

- THE CONTRACTOR SHALL CONDUCT HIS OR HER OPERATIONS IN SUCH A MANNER AS TO MINIMIZE THE AREAS LEFT BARREN DURING CONSTRUCTION AND TO DISTURB ONLY THOSE AREAS ABSOLUTELY REQUIRED FOR THE CONSTRUCTION OF THE PROJECT.
- EROSION CONTROL ITEMS SHALL BE INSTALLED AND MAINTAINED ACCORDING TO THE MDOT STANDARD PLANS AND SHALL BE REMOVED WHEN THEY ARE NO LONGER EFFECTIVE AS DETERMINED BY THE ENGINEER. NO SEPARATE PAYMENT SHALL BE ALLOWED FOR EITHER MAINTENANCE OR REMOVAL OF THE EROSION CONTROL ITEMS.
- THE CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED IN STORM SEWERS AND DRAINAGE STRUCTURES CONSTRUCTED WITH THE PROJECT WHEN SUCH SEDIMENT EXCEEDS 1/2 OF THE SUMP DEPTH. THE ENGINEER WILL INSPECT SUMPS AFTER STORMS AND DIRECT THE CONTRACTOR TO CLEAN OUT TO PROVIDE FOR SEDIMENT COLLECTIONS. CLEANING SUMPS FOR SEDIMENTATION CONTROL SHALL NOT BE PAID FOR SEPARATELY.
- THE CONTRACTOR SHALL FOLLOW ALL ENTITIES HAVING JURISDICTION FOR SOIL EROSION AND SEDIMENTATION CONTROL FOR ALL MATERIALS DISPOSED OF OFF THE PROPERTY.

ALL AREAS DISTURBED BY THE CONTRACTOR AND/OR HIS OR HER SUBCONTRACTOR BEYOND THE GRADING LIMITS OF THIS PROJECT SHALL BE RESTORED WITH THE USE OF SOD OR HYDROSEED AS DIRECTED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS ACTIVITY.

THE CONTRACTOR SHALL BE REIMBURSED BY THE CITY OF OWOSSO FOR THE INITIAL COST OF THE SOIL EROSION AND SEDIMENTATION CONTROL PERMIT.

## ENVIRONMENTAL IMPACT MEASURES

EASTERN MASSASAUGA RATTLESNAKE (EMR) ITEMS:

- SILT FENCING WILL BE INSTALLED ALONG THE ENTIRE AREA OF IMPACT PERIMETER ADJACENT TO ALL WETLAND AREAS. ENDS OF THE SILT FENCING WILL BE ANGLED BACK INTO THE WETLAND AREA AT 45 DEGREE ANGLE TO PROMOTE SNAKE MOVEMENT AWAY FROM THE CONSTRUCTION AREA. ANY BREAKS IN THE EXCLUSION FENCING TO ALLOW FOR CONSTRUCTION TRAFFIC MOVEMENT MUST ALSO BE TURNED BACK TOWARDS HABITAT AREAS AT A 45 DEGREE ANGLE AND CHECKED FOR SNAKES BEFORE TRAFFIC ENTERS THE CONSTRUCTION ZONE.
- EXCLUSION FENCING PERIMETER WILL BE CHECKED AT THE BEGINNING OF EVERY WORK DAY BY A QUALIFIED INDIVIDUAL TO ENSURE NO EMR ARE PRESENT.
- WORK CREWS WILL WATCH THE MDNR'S "60-SECOND SNAKES: THE EASTERN MASSASAUGA RATTLESNAKE (EMR)" VIDEO, REVIEW THE EMR FACTSHEET OR CALL 517-351-2555 TO INCREASE HUMAN SAFETY AND AWARENESS OF EMR. VIDEO LINK ([https://youtu.be/PFnXe\\_e02w](https://youtu.be/PFnXe_e02w)).
- EMR FACTSHEET LINK (<https://www.fws.gov/sites/default/files/documents/EMRfactsheetSept2016.pdf>)
- ALL PERSONNEL WILL REPORT ANY EASTERN MASSASAUGA RATTLESNAKE OBSERVATIONS, OR OBSERVATION OF ANY OTHER LISTED THREATENED OR ENDANGERED SPECIES, DURING ACTION IMPLEMENTATION TO THE USFWS WITHIN 24 HOURS BY CALLING 517-351-2555.
- WILDLIFE SAFE MATERIALS FOR EROSION CONTROL AND SITE RESTORATION WILL BE UTILIZED TO ELIMINATE THE USE OF EROSION CONTROL PRODUCTS CONTAINING PLASTIC MESH NETTING OR OTHER SIMILAR MATERIAL THAT COULD ENSNARE EASTERN MASSASAUGA RATTLESNAKE.

NORTHERN LONG-EARED BAT & INDIANA BAT

- ALL TREE TRIMMING OR REMOVAL ACTIVITIES WILL OCCUR BETWEEN OCTOBER 1ST/ AND MARCH 31ST/.
- ANY TREE CLEARING OUTSIDE OF OCTOBER 1ST/ AND MARCH 31ST/ MUST BE APPROVED BY USFWS PRIOR TO CLEARING OR REMOVAL ACTIVITIES.
- ALL PERSONNEL WILL REPORT SIGHTINGS OF NORTHERN LONG EARED BAT AND OR INDIANA BAT TO THE USFWS WITHIN 24 HOURS BY CALLING 517-351-2555.



ISSUE / ISSUED FOR BID 1/31/2022

REVISIONS

MUNICIPALITY OWOSSO

COUNTY SHIAWASSEE

CAUD RB

PROJ INGR AV

ENG ARCH ES

PROJ NUMBER 00202070

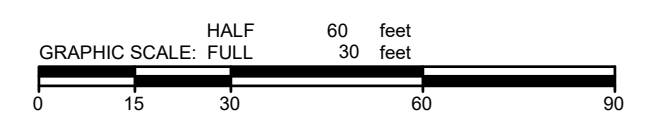
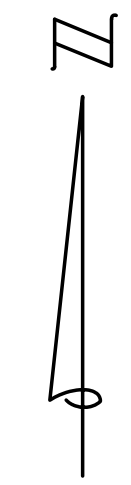
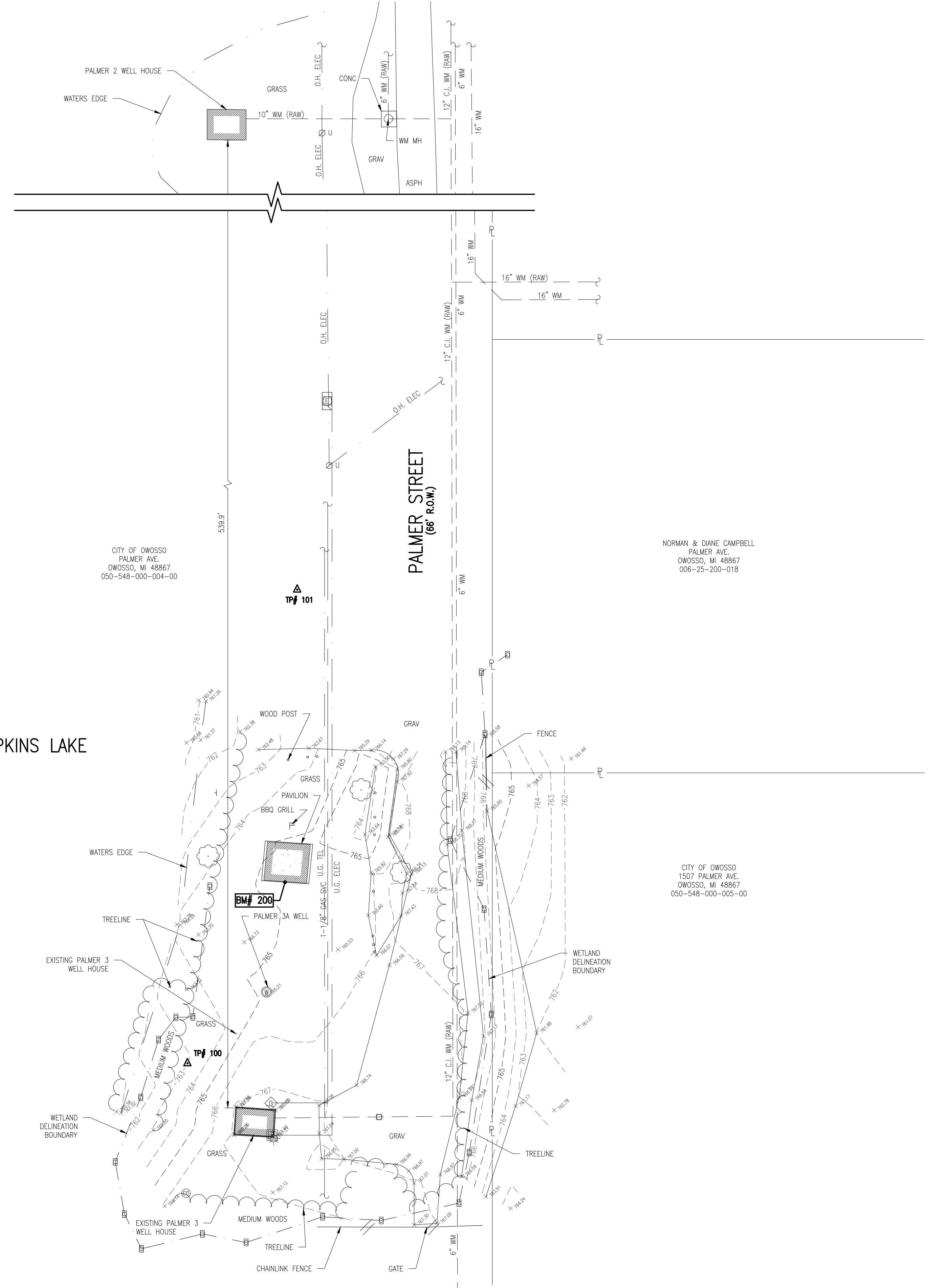
DATE ##

SHEET

CITY OF OWOSSO  
PALMER 3A WELL HOUSE DESIGN  
NOTES

C-2

JOB BENCHMARK # 200 SET CHISELED SQUARE IN SOUTH EDGE OF CONCRETE PAVILION PAD ELEV 765.15	
TRAVERSE POINT # 100 N 538696.456 E 13174636.690	ELEV 765.84
TRAVERSE POINT # 101 N 538915.018 E 13174687.380	ELEV 764.33



**LEGEND - EXISTING**

- ELECTRICAL METER
- ELECTRICAL TRANSFORMER PAD
- GRILL
- GAS RISER
- LIGHT POLE
- POST
- PROPERTY LINE
- SIGN
- STORM CLEANOUT
- SURVEY BENCHMARK
- SURVEY TRAVERSE POINT
- TREE
- WATER HYDRANT
- WATER MANHOLE
- WATER VALVE
- WATER WELL
- WETLAND FLAG
- ELECTRICAL \*
- CABLE/TELEPHONE \*
- GAS \ OIL
- 12" WM WATER MAIN/SERVICE
- 12" WM (RAW) RAW WATER MAIN
- 12" SAN SANITARY SEWER
- 12" STM STORM SEWER
- FENCE
- PROPERTY LINE
- TREE LINE
- WETLAND/EDGE OF WATER
- DELINEATED WETLAND BOUNDARY
- EXISTING SPOT GRADE
- EXISTING CONTOUR
- BUILDING OUTLINE
- CONCRETE



DRAWING PATH: P:\0000\_01\0000\2202070\_Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Topo\22070\SUR.dwg Dec 01, 2022 - 11:34am

- NOTES:**
- EXISTING CONDITIONS ARE PRESENTED AS A COMPILATION OF:
    - TOPOGRAPHIC SURVEY BY OHM
    - FRANCHISE UTILITY MAPS
    - CITY OF OWOSSO RECORD DRAWINGS
  - CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS

**OHM**  
ARCHITECTS ENGINEERS PLANNERS  
201 E Ellsworth St. Unit 100  
Midland, MI 48840  
P (989) 956-2020  
OHM-ADVISORS.COM

---

ISSUE / ISSUED FOR BID / 12/01/2022 / REVISIONS /

MUNICIPALITY / OWOSSO / COUNTY / SHAWANSEE / CAD / MS / PROJ MGR / AV / DATE / 02/02/2020 / ES / PROJ NUMBER / 0202070

---

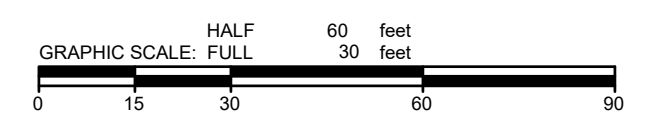
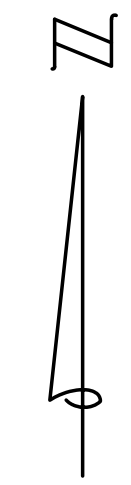
**CITY OF OWOSSO**  
**PALMER 3A WELL HOUSE DESIGN**  
**EXISTING CONDITIONS**

---

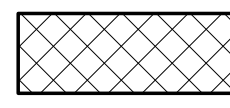



C-3

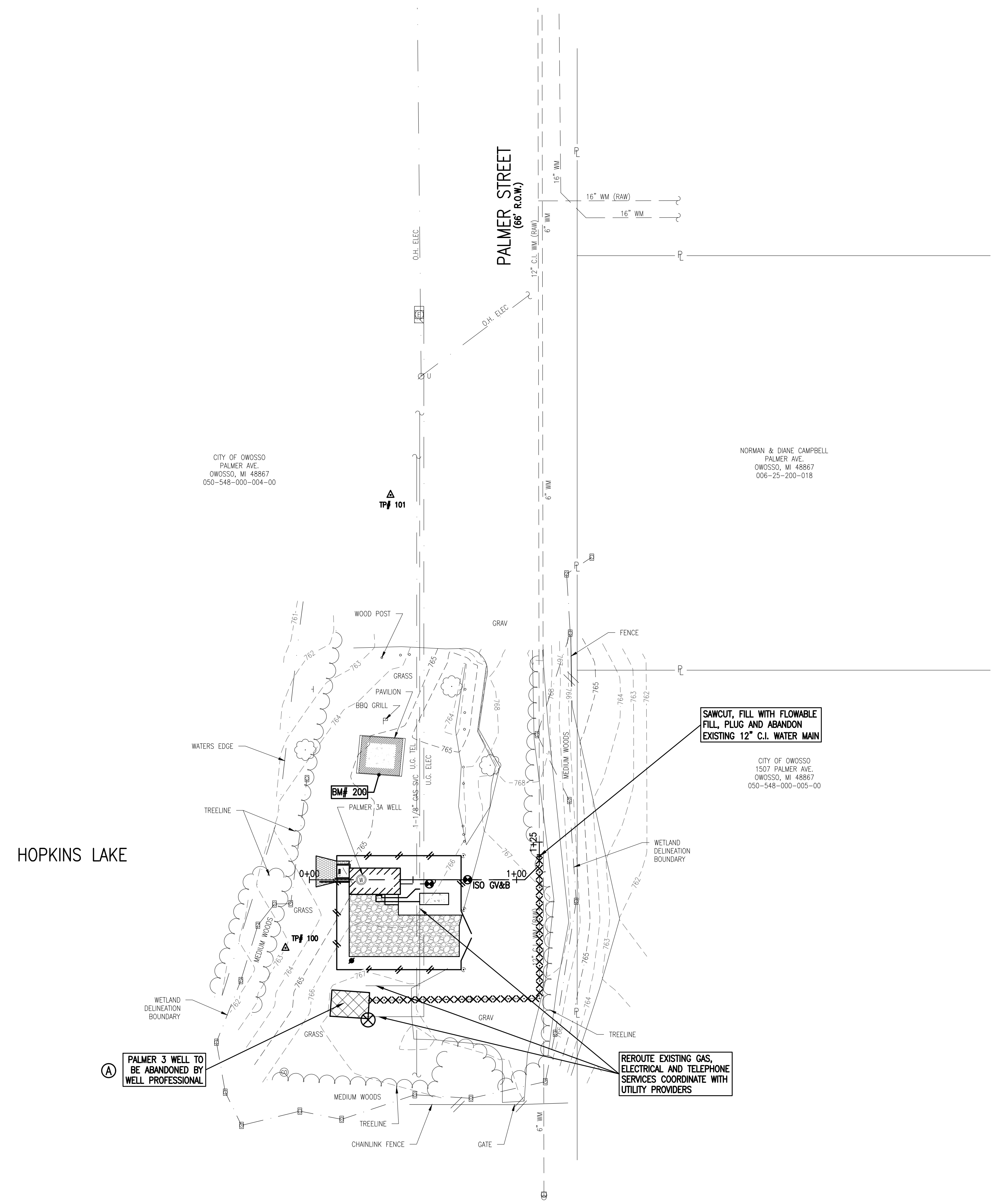
COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM

DRAWING PATH: P:\0000\_01\000022\2020\Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Removal\220709EM.dwg Dec 01, 2022 - 11:34am



**LEGEND**

-  BUILDING REMOVE
-  ABANDON 12" WATER MAIN AND FILL WITH FLOWABLE FILL
-  LIGHT POLE REMOVAL
-  ABANDON



- PALMER 3 WELL ABANDONMENT**
- PALMER 3 WELL = WELLOGIC WELL ID 780 0000 0797
  - PALMER 3 WELL TO BE ABANDONED BY LICENSED WELL DRILLER PER MICHIGAN GROUNDWATER QUALITY CONTROL RULES R 325.1601 ET SEQ. ADOPTED UNDER PART 127, WATER SUPPLY AND SEWER SYSTEMS, OF THE PUBLIC HEALTH CODE, 1978 PA 368, AS AMENDED (WELL CODE).
  - PALMER 3 IS 16-INCH DIAMETER WELL WITH A 12-INCH DIAMETER CASING LINER. THE ORIGINAL DEPTH OF WELL IS 146 FEET PRIOR TO WELL COLLAPSE. THE LOWER 25 FEET TO 35 FEET IS CURRENTLY FILLED WITH SAND, GRAVEL, AND CLAY DEBRIS.
  - IF CASING CANNOT BE PULLED, CASING SHALL BE CUT OFF A MINIMUM OF 5- FEET BELOW GRADE OR AT A DEPTH SPECIFIED BY ABOVE REFERENCED RULES AND HEALTH CODE, WHICHEVER IS DEEPER.

ISSUE	ISSUED FOR	ID

DATE	PROJ NUMBER	ENGARCH	ES	PROJ INGR	AV	CADD	NO	COUNTY	SHAWASSEE	MUNICIPALITY	OWOSSO

CITY OF OWOSSO  
PALMER 3A WELL HOUSE DESIGN  
REMOVAL PLAN



Know what's below.  
Call before you dig.

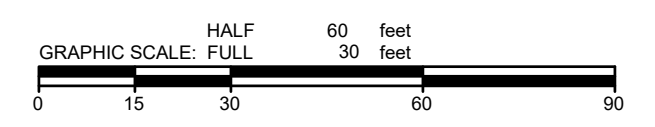
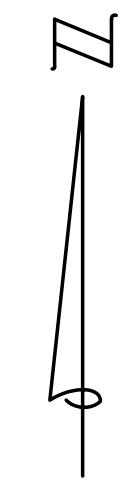
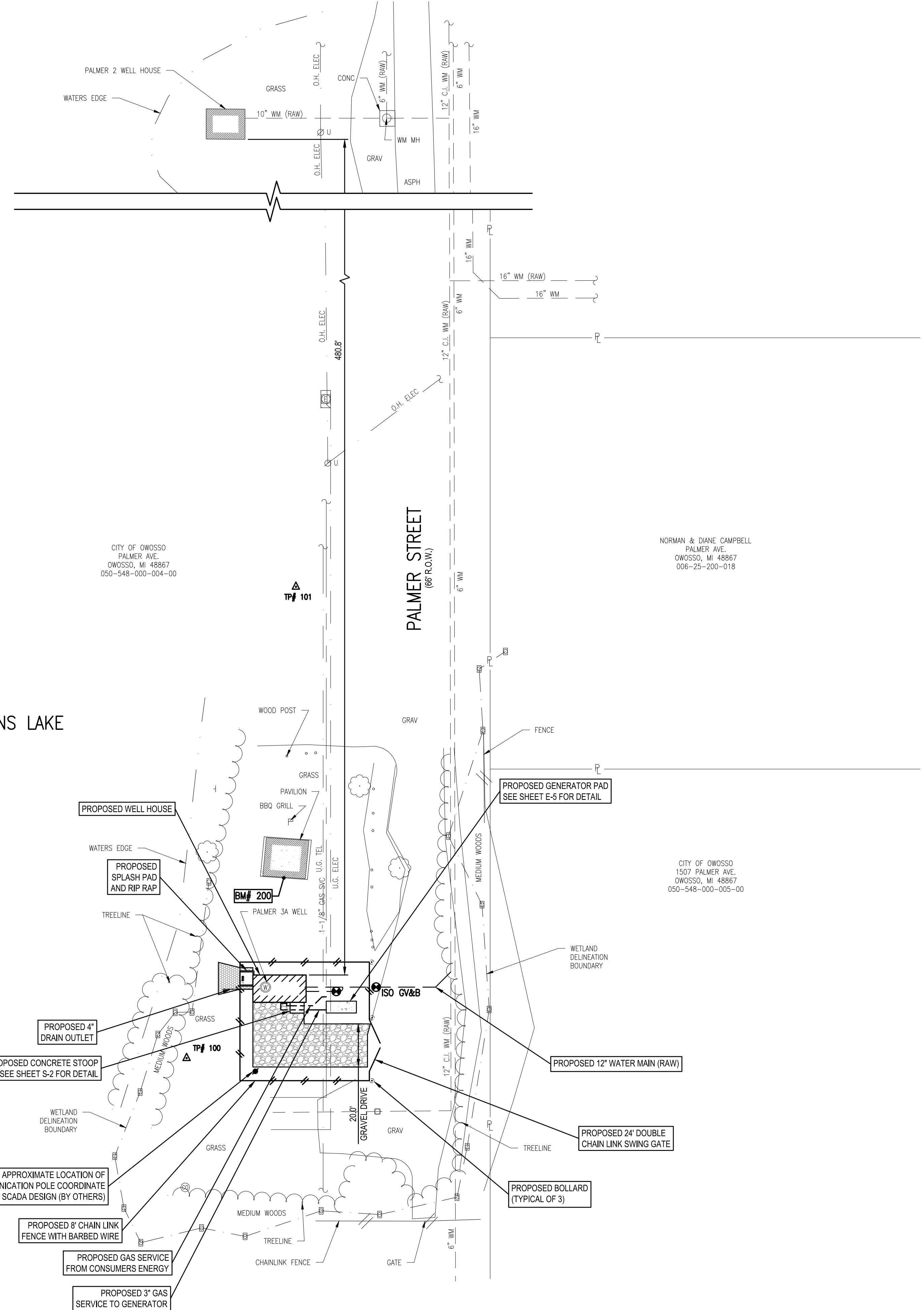
COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM



JOB BENCHMARK # 200  
 SET CHISELED SQUARE IN SOUTH  
 EDGE OF CONCRETE PAVILION PAD  
 ELEV 765.15

TRAVERSE POINT # 100  
 N 538636.456  
 E 13174636.690 ELEV 765.84

TRAVERSE POINT # 101  
 N 538915.018  
 E 13174687.380 ELEV 764.33



**LEGEND**

- PROPOSED 8' CHAIN LINK FENCE WITH BARBED WIRE
- PROPOSED DRAIN PIPE
- PROPOSED GAS SERVICE
- PROPOSED WATER MAIN / SERVICE
- PROPOSED WATER MAIN (RAW) 12" GATE VALVE & BOX
- PROPOSED CURB STOP BOX
- PROPOSED COMMUNICATIONS POLE (BY OTHERS)
- PROPOSED BOLLARD
- PROPOSED BUILDING
- PROPOSED CONCRETE
- PROPOSED AGGREGATE ACCESS DRIVE
- PROPOSED RIP RAP

DRAWING PATH: P:\0000\_01\0000\2022\2070\_Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Plans\_Constr\22070\SS\_E.dwg Dec 01, 2022 - 11:35am

**OHM**  
 ARCHITECTS ENGINEERS PLANNERS  
 201 E Ellsworth St. Unit 100  
 Midland, MI 48640  
 P (989) 956-2020  
 OHM-ADVISORS.COM

NO.	DATE	DESCRIPTION

ISSUE	ISSUED FOR BID	12/01/2022
REVISIONS		

DATE	PROJ NUMBER	ENGINEER	ES	02/02/2020
###	PROJ INGR	AV	MS	
	CADD	SHAWANSEE	COUNTY	OWOSSO
	MUNICIPALITY			

**CITY OF OWOSSO**  
**PALMER 3A WELL HOUSE DESIGN**  
**SITE LAYOUT PLAN**

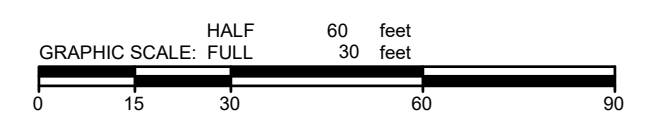
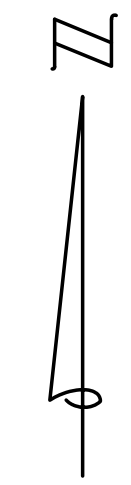


Know what's below.  
 Call before you dig.

SHEET **C-5**

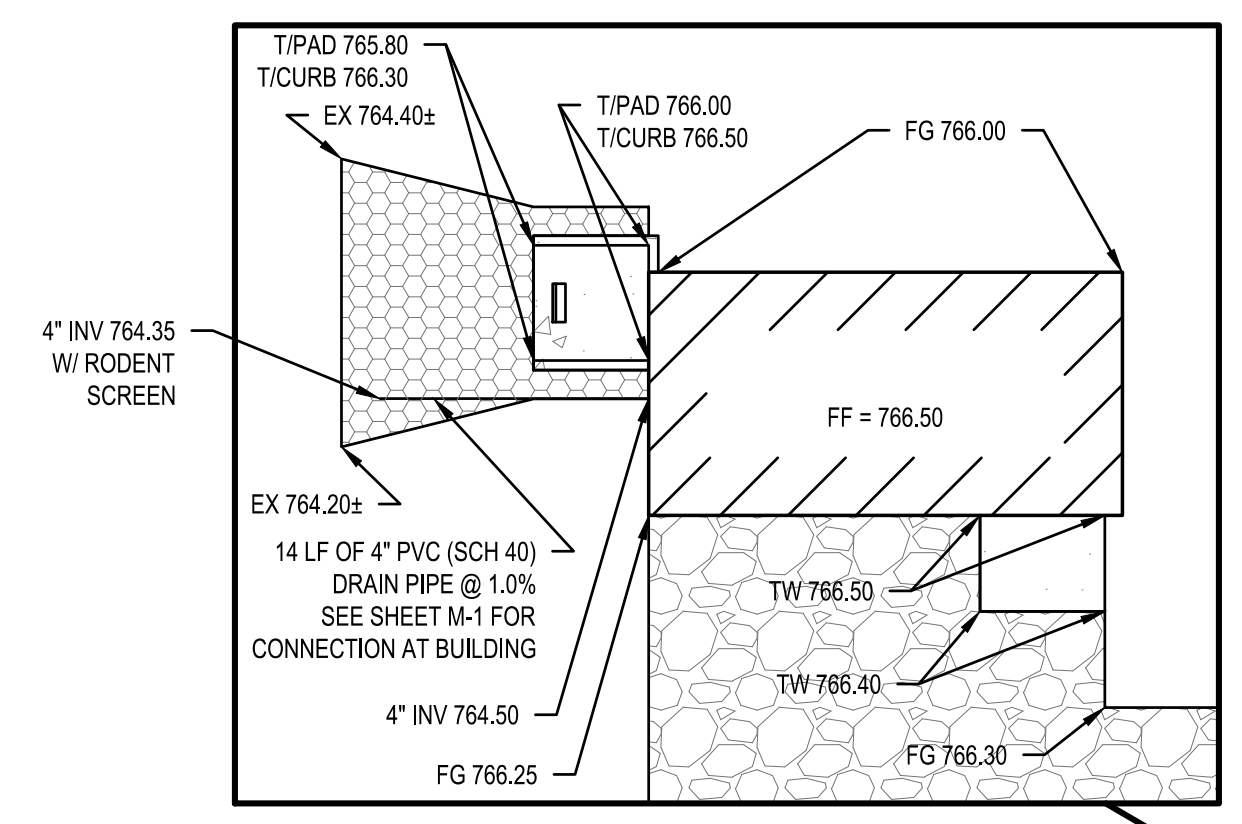
COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM

DRAWING PATH: P:\0000\_01\00002202070\_Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Grading\22070GRD.dwg Dec 01, 2022 - 11:35am



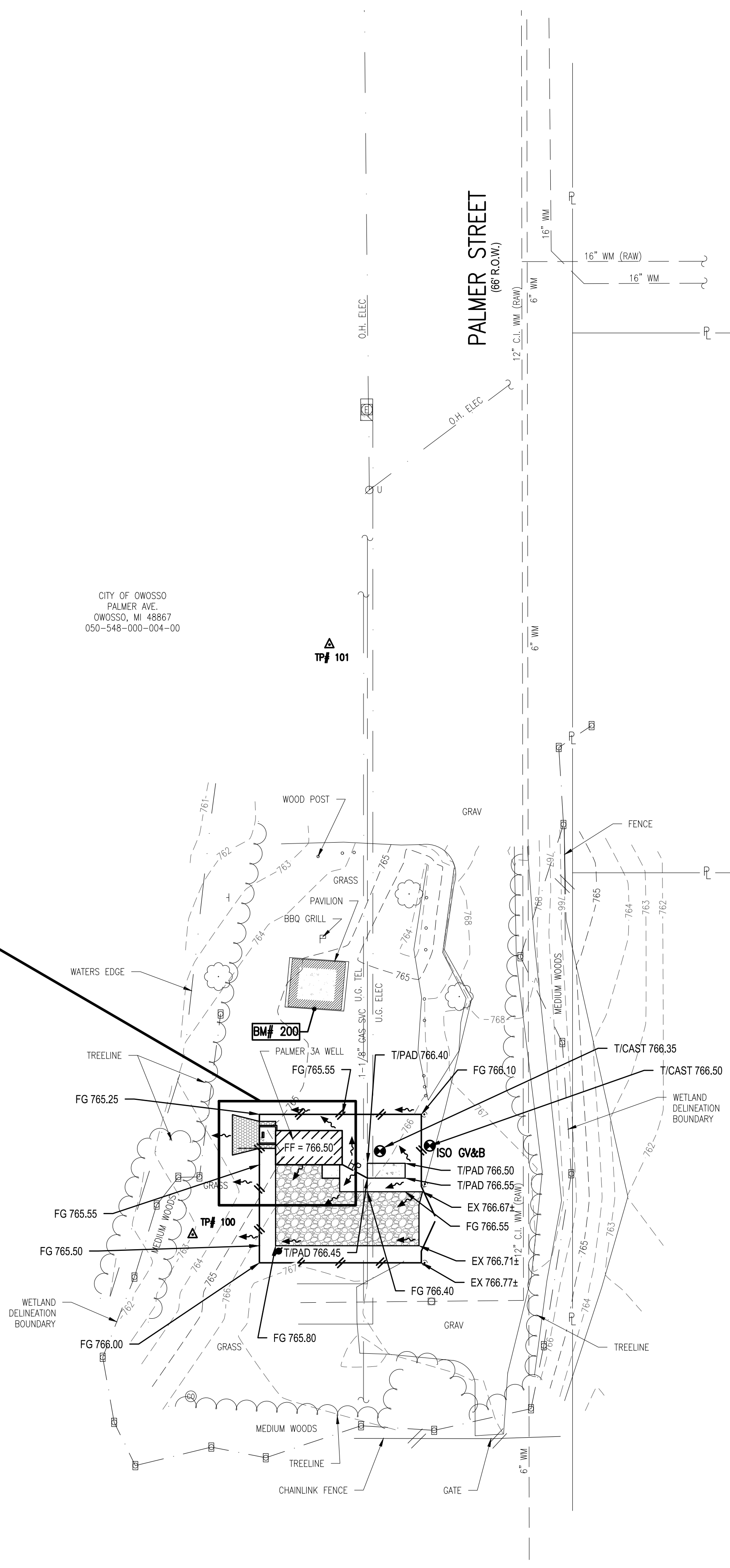
**LEGEND**

- EX EXISTING
  - FF FINISHED FLOOR
  - FG FINISH GRADE / SURFACE (NON-PAVED AREA)
  - HP HIGH POINT
  - T/CAST TOP OF STRUCTURE CASTING
  - T/ TOP OF
  - TP TOP OF PAVEMENT
  - TW TOP OF WALK
  - TWALL TOP OF WALL
- 
- FG 749.25 PROPOSED SPOT GRADE
  - HP PROPOSED HIGH POINT/GRADE BREAK
  - PROPOSED DRAINAGE FLOW ARROW
  - 665 --- EXISTING CONTOUR
  - 664 --- EXISTING CONTOUR



**BUILDING GRADING DETAIL**  
 SCALE: 1" = 10'

NOTE:  
 CONTRACTOR SHALL RE-GRADE OUTSIDE THE FENCE AREA, AS NECESSARY, AT A MAX SLOPE 6H:1V TO THE INTO EXISTING ELEVATIONS AND MAINTAIN POSITIVE DRAINAGE IN A WESTERLY DIRECTION. MAINTAIN A MINIMUM OF 5' SEPARATION BETWEEN WETLAND BOUNDARY AND GRADING LIMITS



CITY OF OWOSSO  
 PALMER AVE.  
 OWOSSO, MI 48867  
 050-548-000-004-00

NORMAN & DIANE CAMPBELL  
 PALMER AVE.  
 OWOSSO, MI 48867  
 006-25-200-018

CITY OF OWOSSO  
 1507 PALMER AVE.  
 OWOSSO, MI 48867  
 050-548-000-005-00

ISSUE / ISSUED FOR BID 12/01/2022

PROJ NUMBER: 002202070  
 DATE: 02/02/2020  
 PROJ INGR: ES  
 COUNTY: SHAWANSEE  
 CADD: MS  
 MUNICIPALITY: OWOSSO

**CITY OF OWOSSO  
 PALMER 3A WELL HOUSE DESIGN  
 SITE GRADING PLAN**

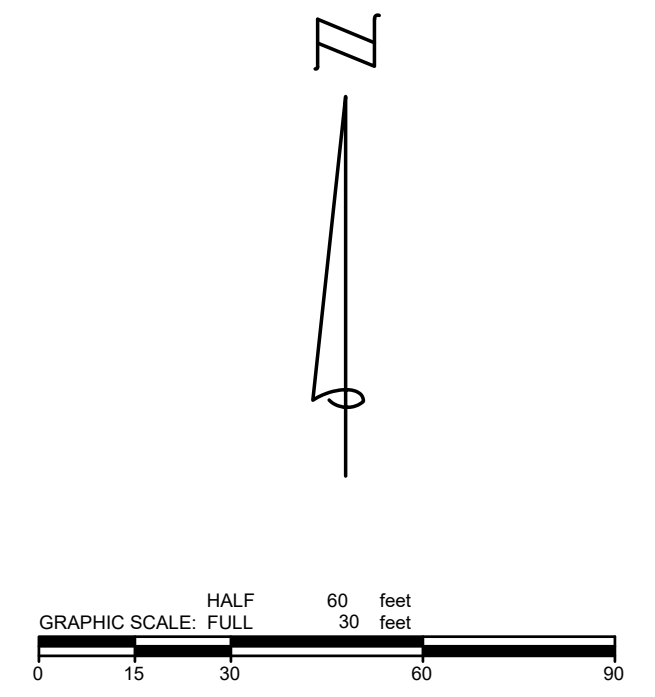
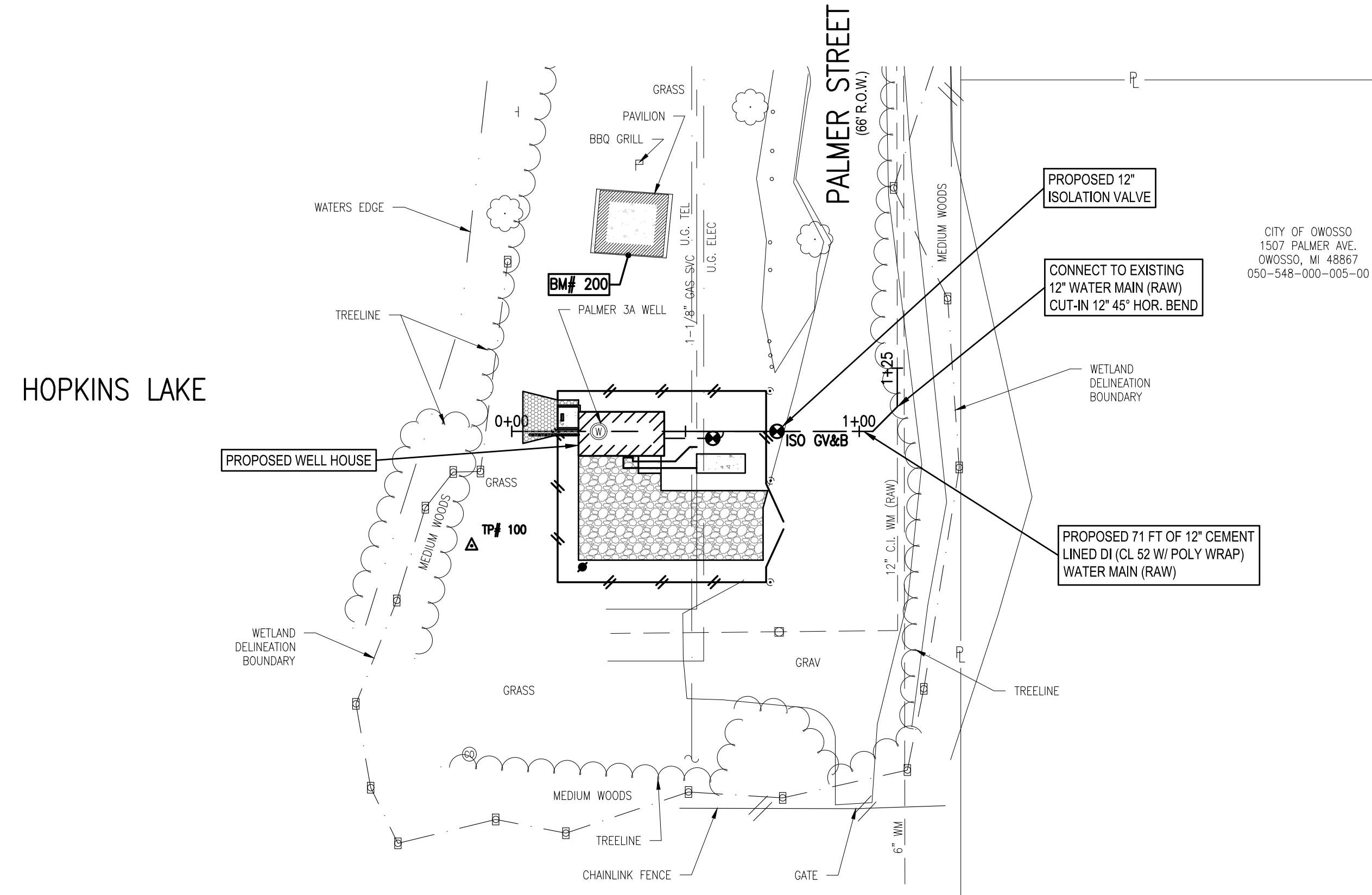


Know what's below.  
 Call before you dig.

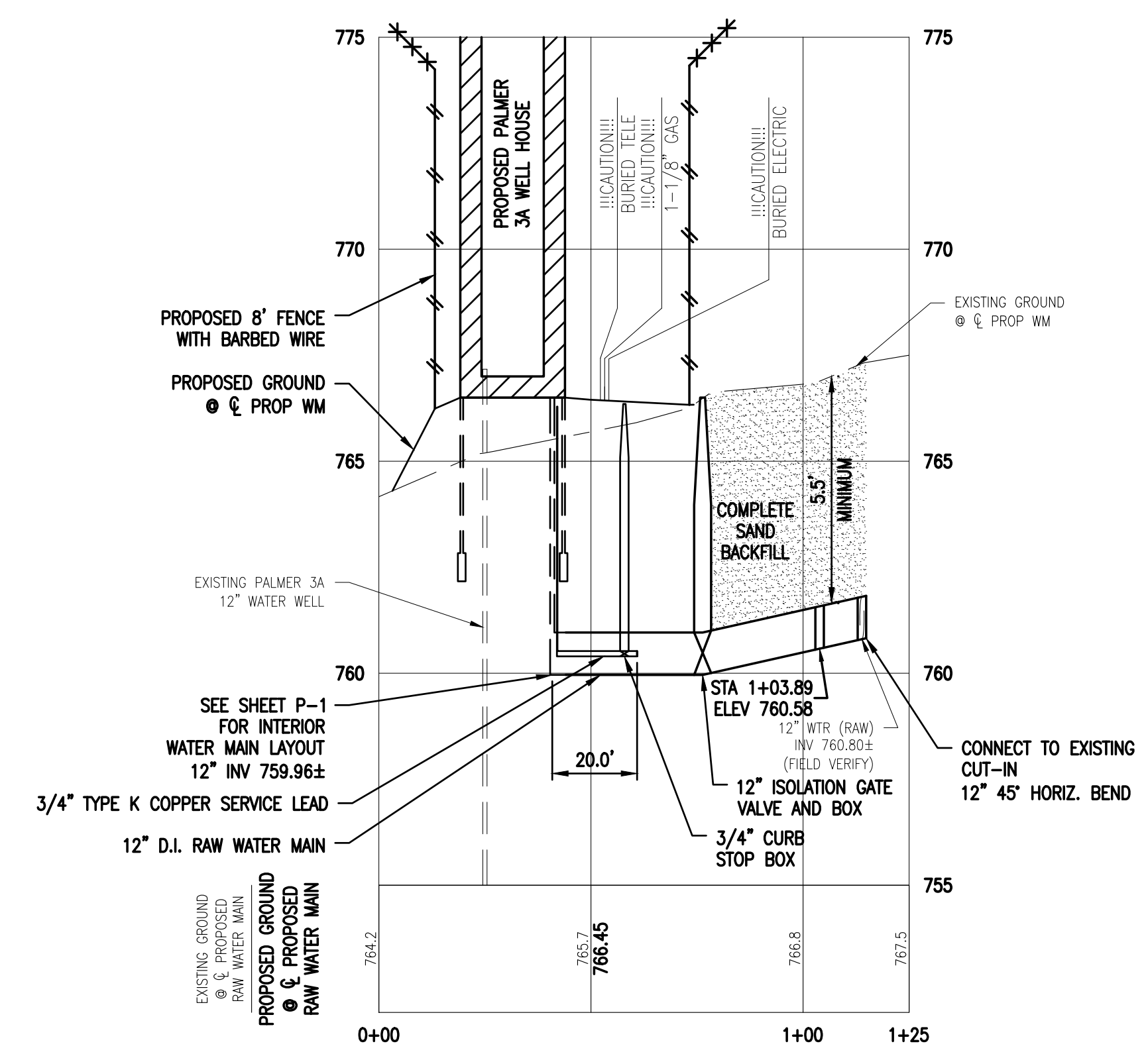
COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM



JOB BENCHMARK # 200 SET CHISELED SQUARE IN SOUTH EDGE OF CONCRETE PAVILION PAD ELEV 765.15
TRAVERSE POINT # 100 N 538696.456 E 13174636.690 ELEV 765.84
TRAVERSE POINT # 101 N 538915.018 E 13174687.380 ELEV 764.33



**OHM**  
ARCHITECTS ENGINEERS PLANNERS  
201 E Ellsworth St. Unit 100  
Midland, MI 48640  
P (989) 956-2020  
OHM-ADVISORS.COM



WATER MAIN APPURTENANCES			
ITEM	STATION	OFFSET	T/BOX OR BURY LINE
CONNECT TO PALMER 3A WELL HOUSE PIPING	0+43.34		
CURB STOP	0+55.88	2' R	766.35
CONNECT TO MAIN 3/4" TYPE K COPPER	0+60.88		
12" ISOLATION GV&B	0+75.34		766.50
12" 45° HOR. BEND	1+03.89		
CONNECT TO EXISTING CUT-IN 12" 45° HORIZ. BEND	1+13.88		

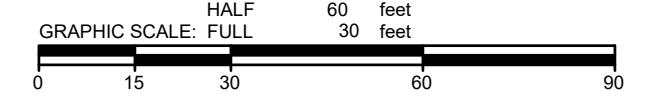
DRAWING PATH: P:\0000\_01\00002202070\_Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Profiles\220707DPR.dwg Dec 01, 2022 - 11:35am

DATE	PROJ NUMBER	ENGINEER	ES	02/20/2020	PROJ MGR	AV	CADD	MS	COUNTY	SHAWASSEE	MANICIPALITY	OWOSSO	ISSUE	ISSUED FOR BID	12/01/2022	REVISIONS	
------	-------------	----------	----	------------	----------	----	------	----	--------	-----------	--------------	--------	-------	----------------	------------	-----------	--

CITY OF OWOSSO  
PALMER 3A WELL HOUSE DESIGN  
RAW WATER MAIN PLAN AND PROFILE



COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM



**SESC GENERAL NOTES**

- SOIL CONDITIONS:  
 EtmooE- UDORTMENTS AND UDIPSAMMENTS, NEARLY LEVEL TO HILLY  
 SOURCE: websoilsurvey.nrcs.usda.gov
- TOTAL AREA OF DISTURBED EARTH APPROXIMATELY 0.2 ACRES.
- NEAREST OPEN WATER IS HOPKINS LAKE ADJACENT TO THE WEST SIDE OF THE SITE.

**MAINTENANCE NOTES**

- SOIL STOCKPILES**  
 PERIODIC INSPECTIONS SHOULD BE DONE TO ENSURE EXCESSIVE EROSION HAS NOT OCCURRED. IF RUNOFF OR WIND EROSION HAS OCCURRED, REDUCE THE SIDE SLOPES OF THE SPOIL PILE, OR RE-STABILIZE THE STOCKPILE BY PROVIDING TEMPORARY SEEDING. WHEN FILTER FENCING IS USED AROUND A SPOIL PILE, PERIODIC CHECKS SHOULD BE MADE TO ENSURE THAT PIPING HAS NOT OCCURRED UNDER THE FENCING, AND TO ENSURE THE FENCE HAS NOT COLLAPSED DUE TO SOIL SLIPPAGE OR ACCESS BY CONSTRUCTION EQUIPMENT. REPAIR ANY DAMAGED FENCING IMMEDIATELY. BERMS AT THE BASE OF THE SPOIL PILE WHICH BECOME DAMAGED SHOULD BE REPLACED.
- DUST CONTROL**  
 TO PREVENT DUST FROM BECOMING A PUBLIC NUISANCE AND CAUSING OFF-SITE DAMAGES, DUST CONTROL SHOULD BE ONGOING DURING EARTH CHANGE ACTIVITIES.
- SILT FENCE**  
 SILT FENCE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. SILT FENCES SHOULD BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND SEVERAL TIMES DURING PROLONGED RAINFALLS. IF THE FENCE IS SAGGING OR THE SOIL HAS REACHED ONE HALF (1/2) THE HEIGHT OF THE FABRIC, THE SOIL BEHIND THE FABRIC MUST BE REMOVED AND DISPOSED OF IN A STABLE UPLAND SITE. THE SOIL CAN BE ADDED TO THE SOIL STOCKPILE. IF THE FABRIC IS BEING UNDERCUT (I.E. IF WATER IS SEEPING UNDER THE FENCE), THE FENCE SHOULD BE REMOVED AND REINSTALLED FOLLOWING THE PROCEDURES GIVEN ABOVE. FABRIC WHICH DECOMPOSES OR OTHERWISE BECOMES INEFFECTIVE SHOULD BE REMOVED AND REPLACED WITH NEW FILTER FABRIC IMMEDIATELY. SILT FENCES SHOULD BE REMOVED ONCE VEGETATION IS WELL ESTABLISHED AND THE UP-SLOPE AREA IS FULLY STABILIZED.
- INLET FILTERS**  
 PERIODIC INSPECTIONS SHOULD BE DONE TO ENSURE THAT THE INTEGRITY OF THE GEOTEXTILE FILTER IS MAINTAINED. THE FABRIC SHALL BE REMOVED AND REPLACED SHOULD IT BECOME SEDIMENT LABEN. THE INLET GEOTEXTILE FILTER SHALL BE REMOVED AFTER THE ESTABLISHMENT OF FINAL GRADE AND PRIOR TO PAVEMENT INSTALLATION.
- SEEDING**  
 NEWLY SEEDED AREAS NEED TO BE INSPECTED FREQUENTLY FOR THE FIRST FEW MONTHS TO ENSURE THE GRASS IS GROWING. IF THE SEEDED AREA IS DAMAGED DUE TO RUNOFF, ADDITIONAL STORMWATER MEASURES MAY BE NEEDED. SPOT SEEDED CAN BE DONE ON SMALL AREAS TO FILL IN BARE SPOTS WHERE GRASS DIDN'T GROW PROPERLY.
- MULCHING**  
 MULCHED AREAS SHOULD BE CHECKED FOLLOWING EACH RAIN TO ENSURE THE MULCH IS STAYING IN PLACE. ADDITIONAL TACKING MATERIALS OR NETTING MAY NEED TO BE APPLIED TO HOLD THE MULCH IN PLACE.
- STREET MAINTENANCE**  
 CONTRACTOR SHALL SCRAPE ALL PUBLIC ROADS AT LEAST ON A DAILY BASIS. IN ADDITION, CONTRACTOR SHALL PROVIDE SWEEPING OF PUBLIC ROADS AT LEAST ON A WEEKLY BASIS.

**CONSTRUCTION SEQUENCE**

- PROVIDE EROSION CONTROL MEASURES THAT WILL BE USED AS PART OF THIS WORK. INSTALL ADDITIONAL MEASURES AS REQUIRED BY THESE DRAWINGS AND AS FIELD CONDITIONS DICTATE IN ACCORDANCE WITH THE SHAWANSEE COUNTY REQUIREMENTS.
- IMPLEMENT TEMPORARY SOIL EROSION CONTROL MEASURES, INCLUDING SILT FENCE INSTALLATION.
- STRIP TOPSOIL AND STOCKPILE.
- BEGIN BUILDING CONSTRUCTION.
- INSTALL UTILITIES.
- INSTALL DRIVE AND FENCING.
- BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL HAVE PERMANENT STABILIZATION COMPLETED WITHIN 5 DAYS OF FINAL GRADE.
- DAILY, OR AS REQUIRED, CONSTRUCT AND MAINTAIN TEMPORARY BERMS, DRAINS, SILT FENCE, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
- FINISH GRADE, REDISTRIBUTE TOPSOIL AND ESTABLISH VEGETATION ON ALL DISTURBED GROUND AREAS.
- CLEAN PAVEMENT AND STORM SEWERS OF ALL SEDIMENT.
- REMOVE SOIL EROSION CONTROL MEASURES AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL SOIL EROSION CONTROL MEASURES ARE INSTALLED AND MAINTAINED.

**SOIL EROSION AND SEDIMENTATION CONTROL MEASURES**

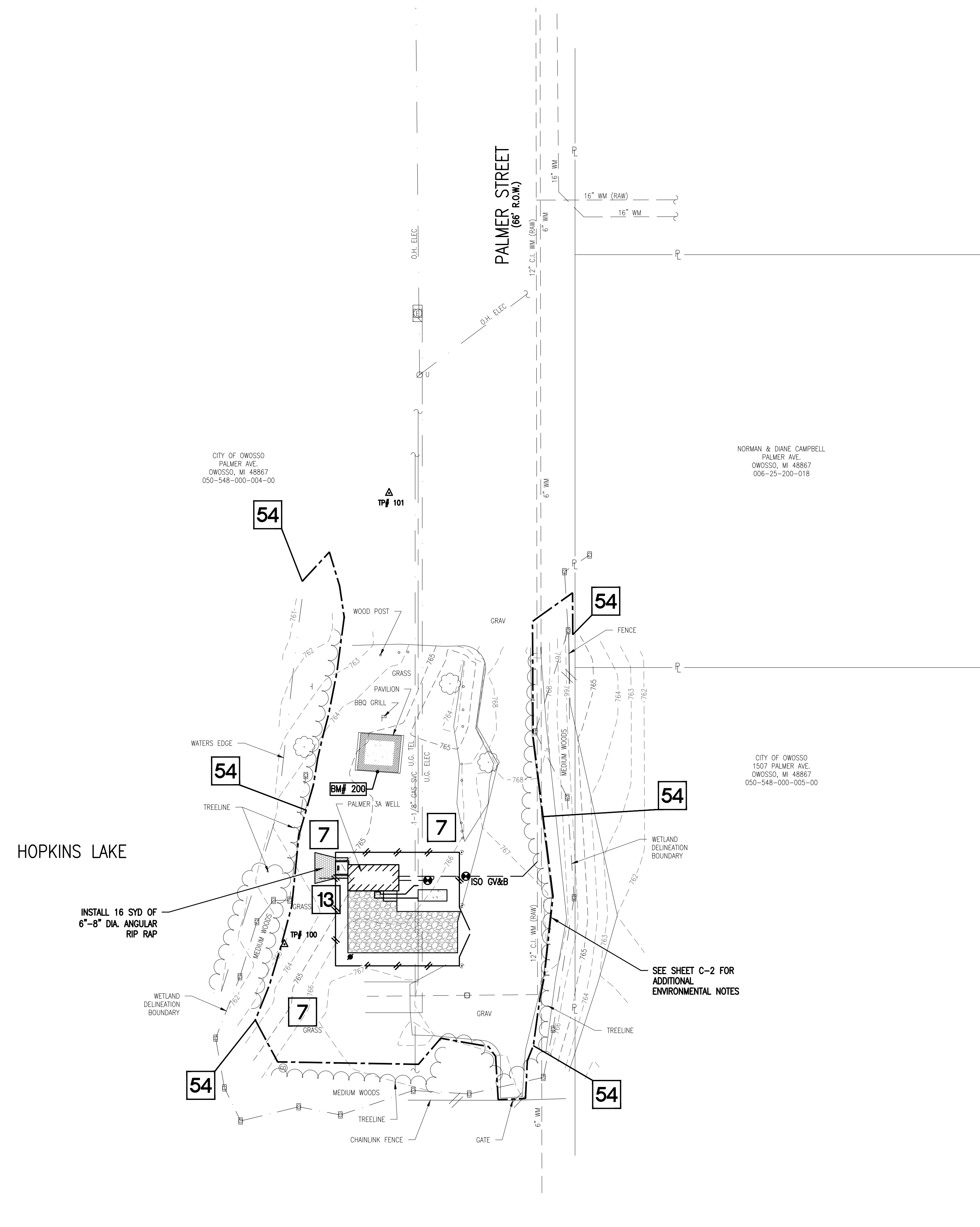
<b>7</b>		Effective on large areas. Mulch facing agent used to provide immediate protection until grass is rooted. Should include preplant topsoil bed.	PERMANENT MEASURE
<b>13</b>		Used where vegetation is not easily established. Effective for high velocities or high concentrations. Permits runoff to infiltrate soil. Dissipates energy flow at system outlets.	PERMANENT MEASURE
<b>54</b>		Filters and detains runoff. Shown on plan as ---	TEMPORARY MEASURE

**SOIL EROSION AND SEDIMENTATION CONTROL MAINTENANCE SCHEDULE**

TASK	FREQUENCY	RR/PP	SILT FENCE	INLET FILTERS	STORM SEWER	OS SUMPS	VEGETATION
INSPECT FOR SEDIMENT ACCUMULATION	WEEKLY		X	X	X	X	X
REMOVE ACCUMULATED SEDIMENT	AS NEEDED		X	X	X	X	X
INSPECT FOR FLOATABLES AND DEBRIS	WEEKLY				X	X	X
REMOVE FLOATABLES AND DEBRIS	AS NEEDED				X	X	X
INSPECT FOR PERMIT CONFORMANCE	AFTER RAIN	X	X	X			
RESTORE TO PERMIT CONFORMANCE	AS NEEDED	X	X	X			
INSPECT FOR SOIL EROSION	AFTER RAIN						X
RESTORE TO PREVENT EROSION	AS NEEDED						X
SCRAPE STREET	DAILY						
SWEEP STREET	WEEKLY						

**SOIL EROSION AND SEDIMENTATION CONTROL OPERATION TIME SCHEDULE**

CONSTRUCTION SEQUENCE	MARCH/APRIL	MAY/JUNE	JULY/AUG	SEP/OCT	NOV/DEC	JAN/FEB
TEMPORARY EROSION CONTROL MEASURES						
CLEARING						
STRIP & STOCKPILE TOPSOIL / ROUGH GRADE						
BUILDING CONSTRUCTION						
INSTALL ALL OTHER UTILITIES						
SITE CONSTRUCTION						
PERMANENT EROSION CONTROL MEASURES						
FINISH GRADING						



CITY OF OWOSSO  
 PALMER AVE.  
 OWOSSO, MI 48867  
 050-548-000-004-00

NORMAN & DIANE CAMPBELL  
 PALMER AVE.  
 OWOSSO, MI 48867  
 006-25-200-018

CITY OF OWOSSO  
 1507 PALMER AVE.  
 OWOSSO, MI 48867  
 050-548-000-005-00

INSTALL 16 SYD OF  
 6"-8" DIA. ANGULAR  
 RIP RAP

SEE SHEET C-2 FOR  
 ADDITIONAL  
 ENVIRONMENTAL NOTES

DRAWING PATH: P:\0000\_010000\2022\2020\Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Plans\_Constr\220705ESC.dwg Dec 01, 2022 - 11:35am

ISSUE: ISSUED FOR BID 12/01/2022

PROJ NUMBER: 00202070  
 DATE: 02/20/20  
 PROJ INGR: ES  
 PROJ INGR: AV  
 COUNTY: SHAWANSEE  
 CAD: MS  
 MUNICIPALITY: OWOSSO

CITY OF OWOSSO  
 PALMER 3A WELL HOUSE DESIGN  
 SOIL EROSION AND SEDIMENTATION CONTROL PLAN

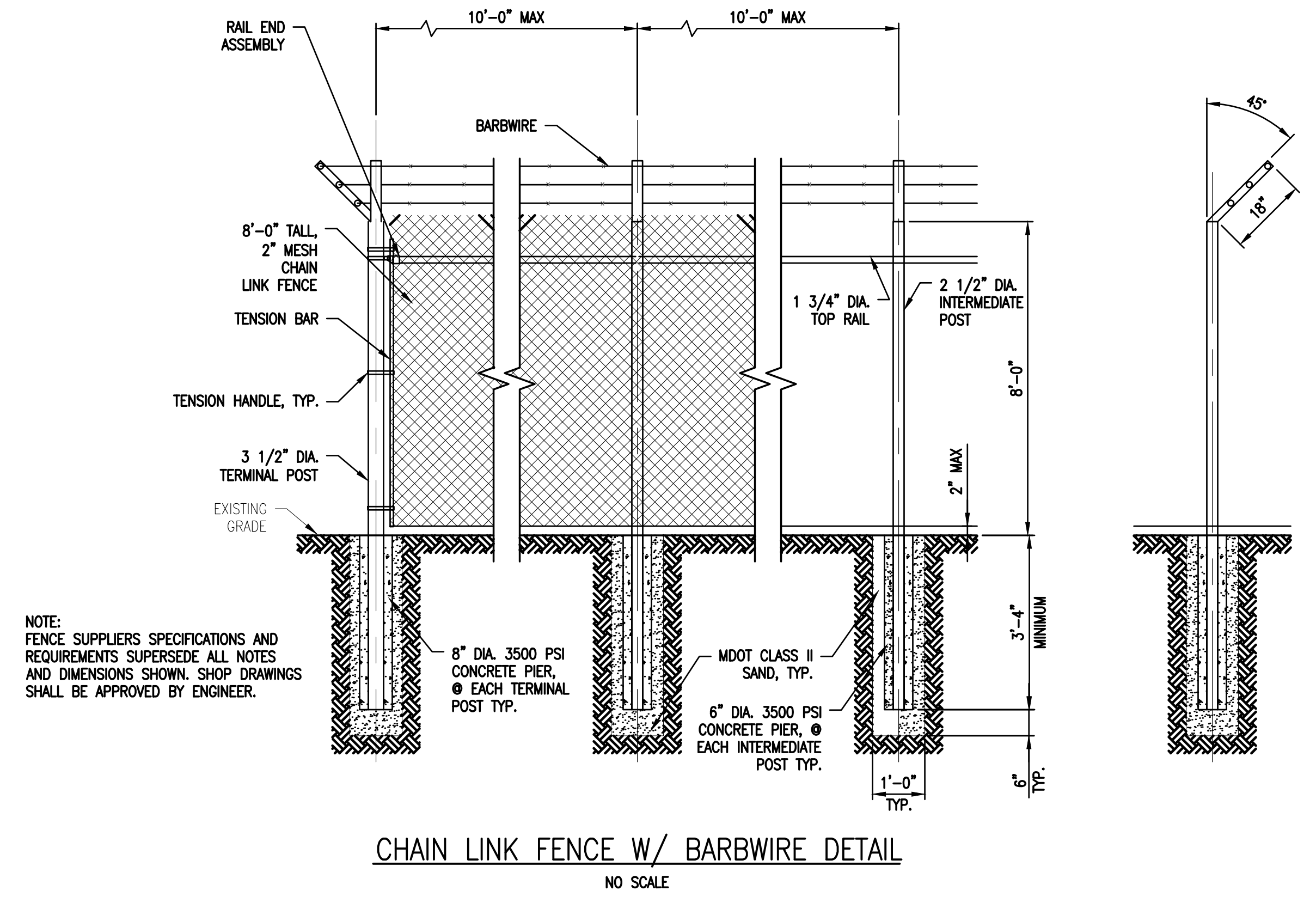
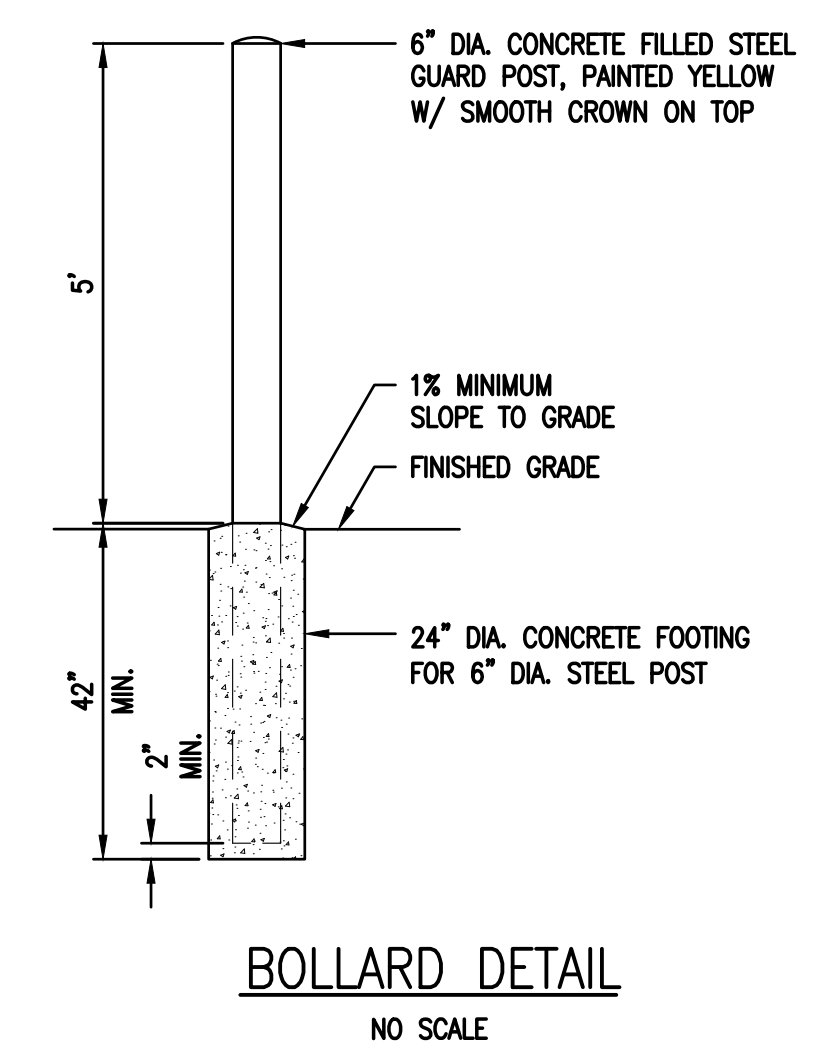
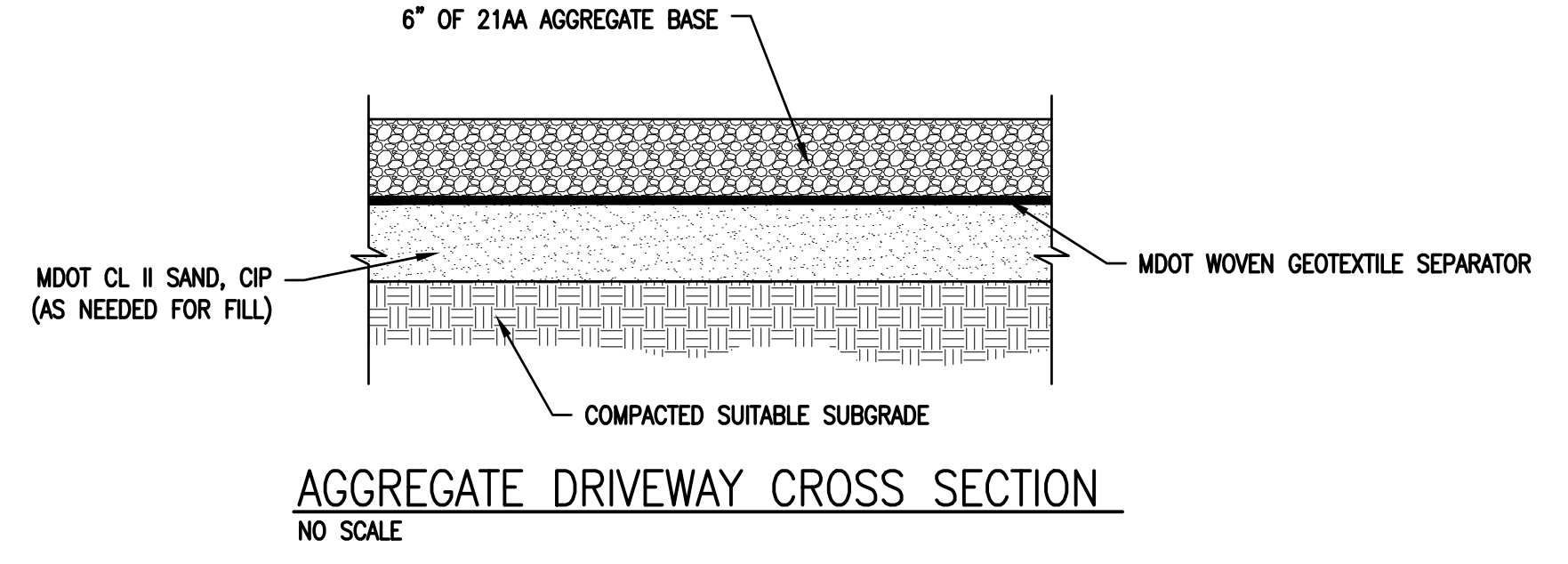


Know what's below.  
 Call before you dig.

COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM



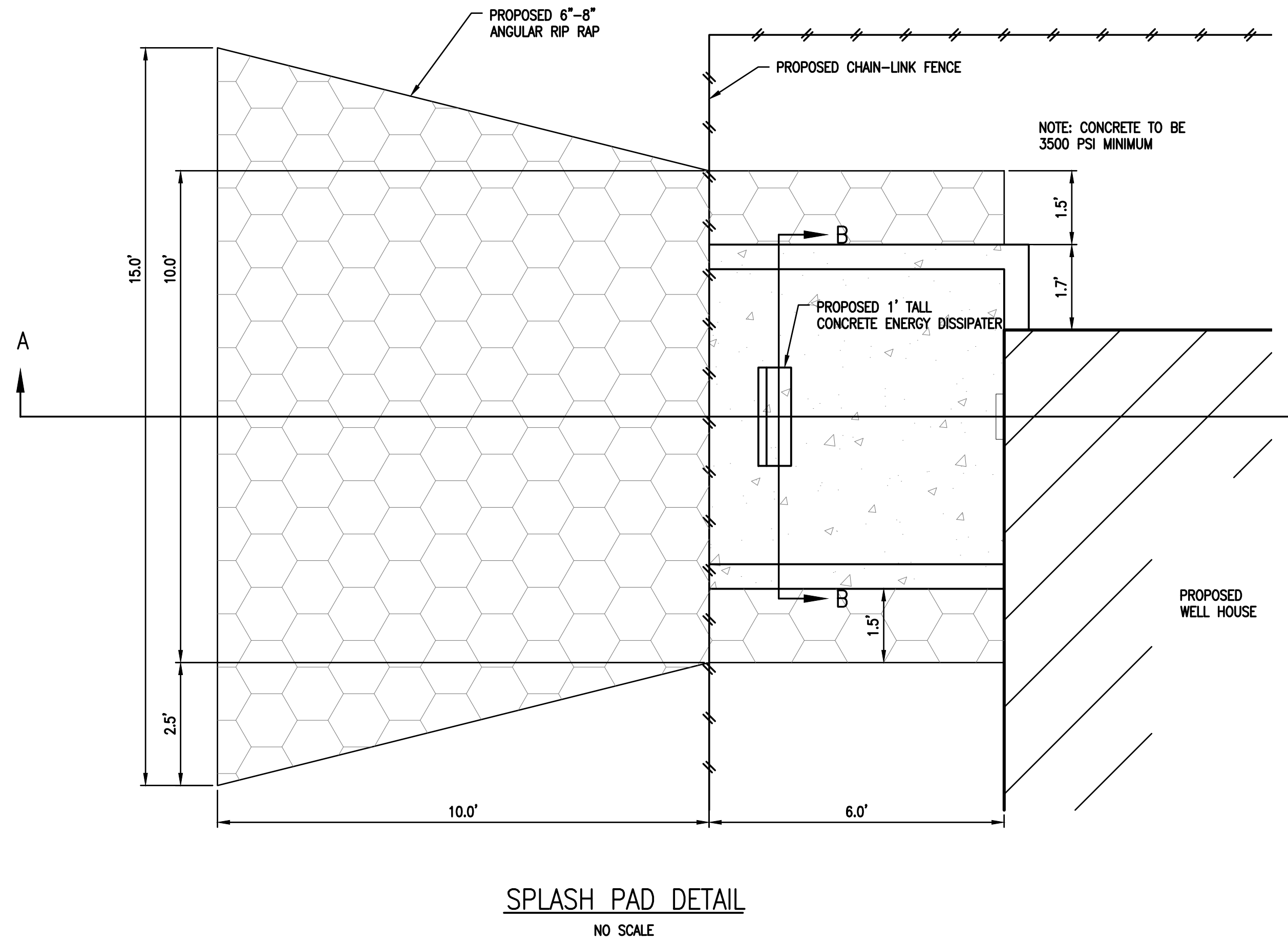
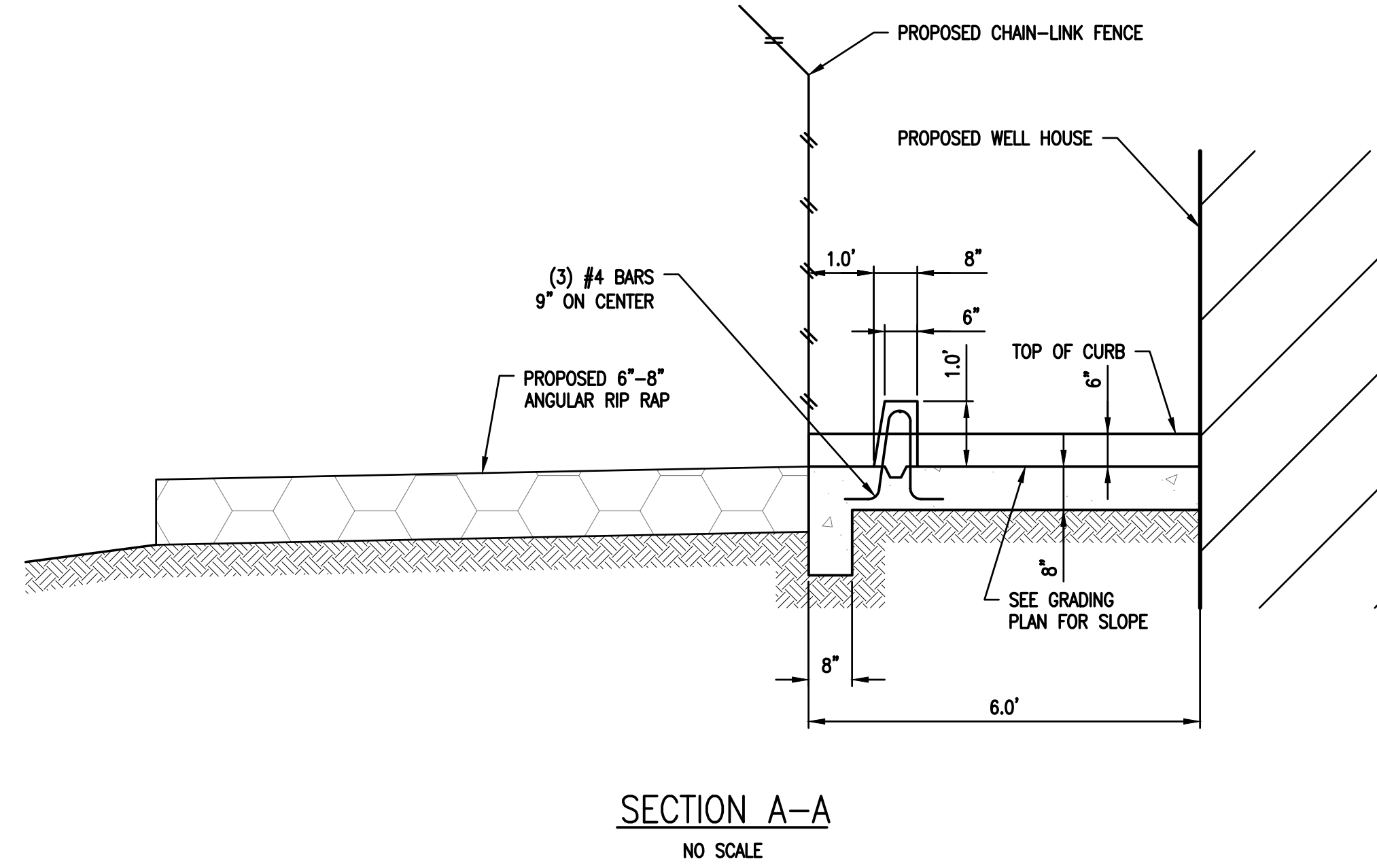
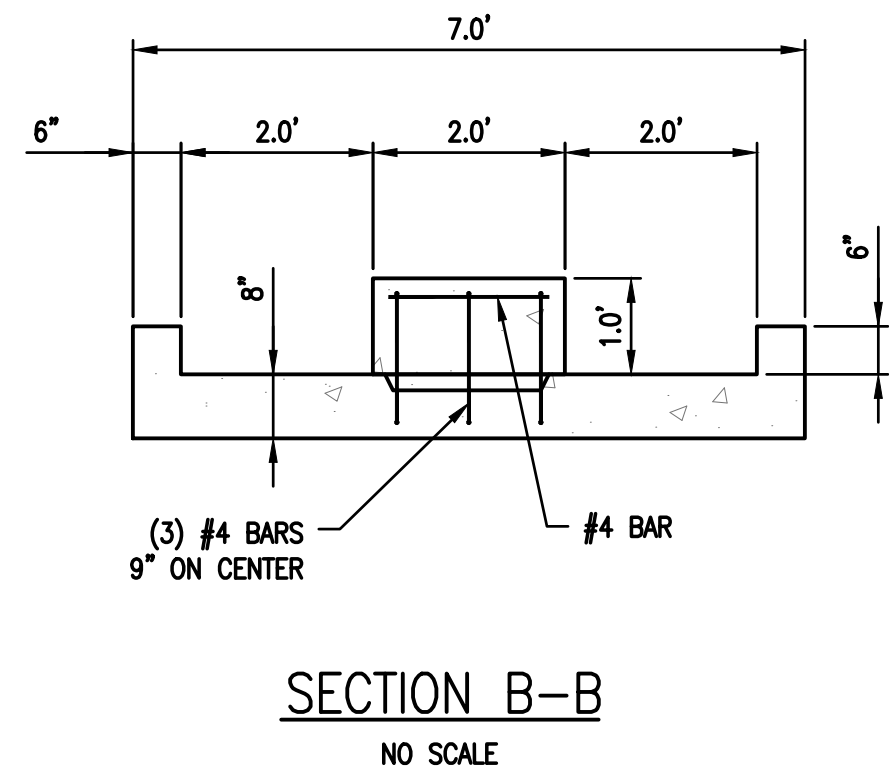
DRAWING PATH: P:\0000\_01\0000\2022\070\_Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Details\22070DET.dwg Dec 01, 2022 - 11:35am



DATE	PROJ NUMBER	ENGINEER	PROJ MGR	CADD	COUNTY	MUNICIPALITY
02/02/2020	02022070	ES	AV	SHAWASSEE	OWOSSO	OWOSSO
ISSUE	ISSUED FOR BID	12/01/2022	REVISIONS			
<b>CITY OF OWOSSO</b> <b>PALMER 3A WELL HOUSE DESIGN</b> <b>SITE DETAIL SHEET</b>						

COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM

DRAWING PATH: P:\0000\_01\00002202070\_Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Details\22070DET.dwg Dec 01, 2022 - 11:35am



ISSUE / ISSUED FOR BID / 12/01/2022

REVISIONS

...

DATE / PROJECT NUMBER / ENGINEER / ES / 02/22/2020 / AV / PROJ MGR / AV / COUNTY / SHAWASSEE / CAD / RB / MUNICIPALITY / OWASSO

**CITY OF OWASSO**  
**PALMER 3A WELL HOUSE DESIGN**  
**SITE DETAIL SHEET**

SHEET

**C-10**

COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM



MINIMUM PIPE RESTRAINT LENGTH SCHEDULE FOR GROUND BURIED PRESSURE PIPES(1)

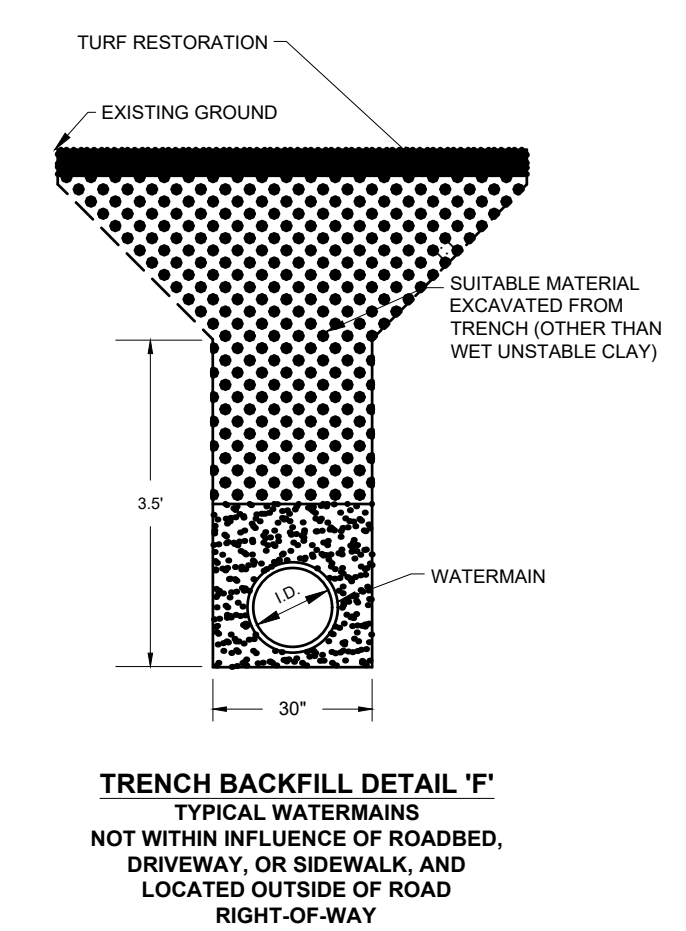
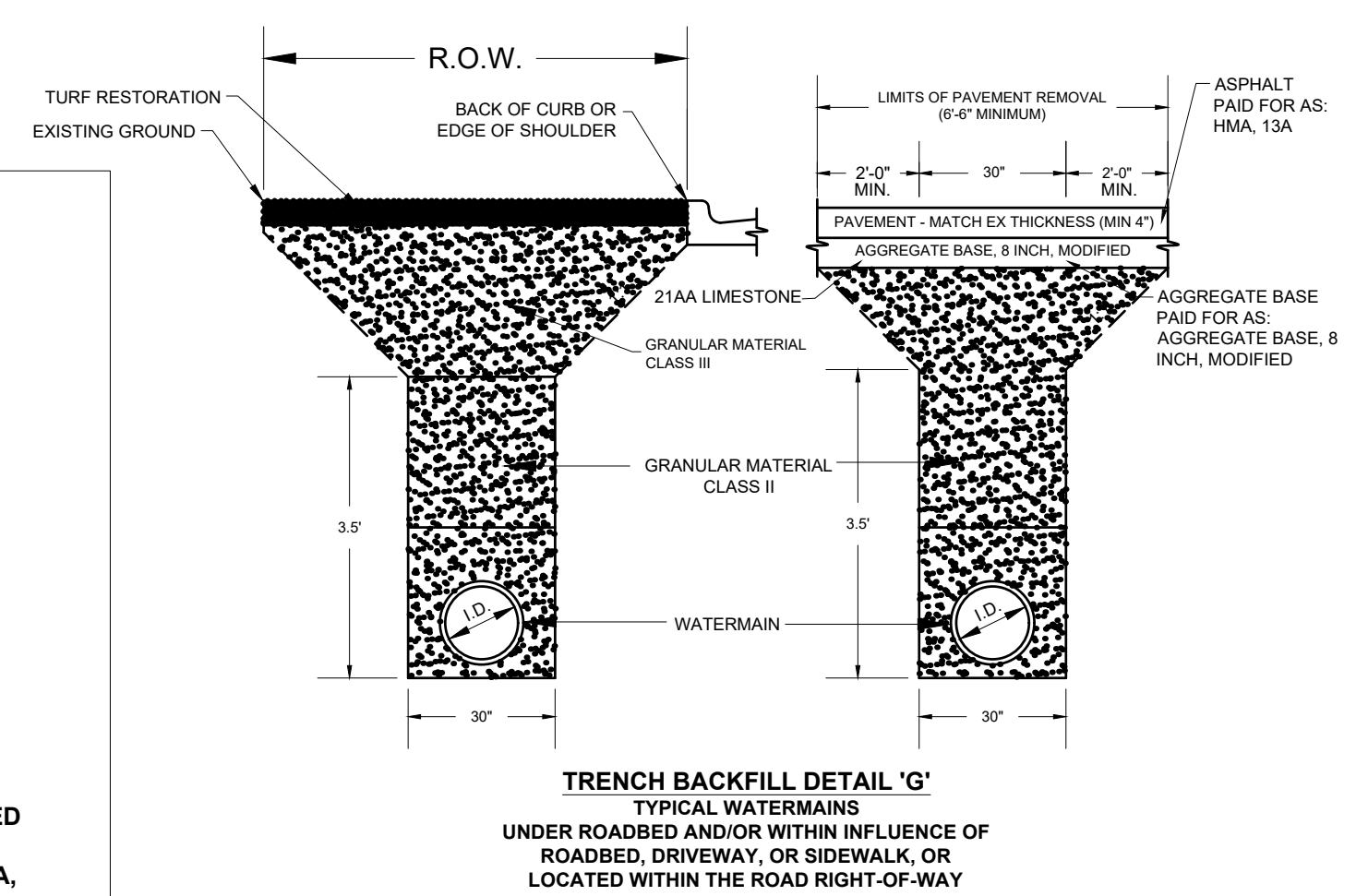
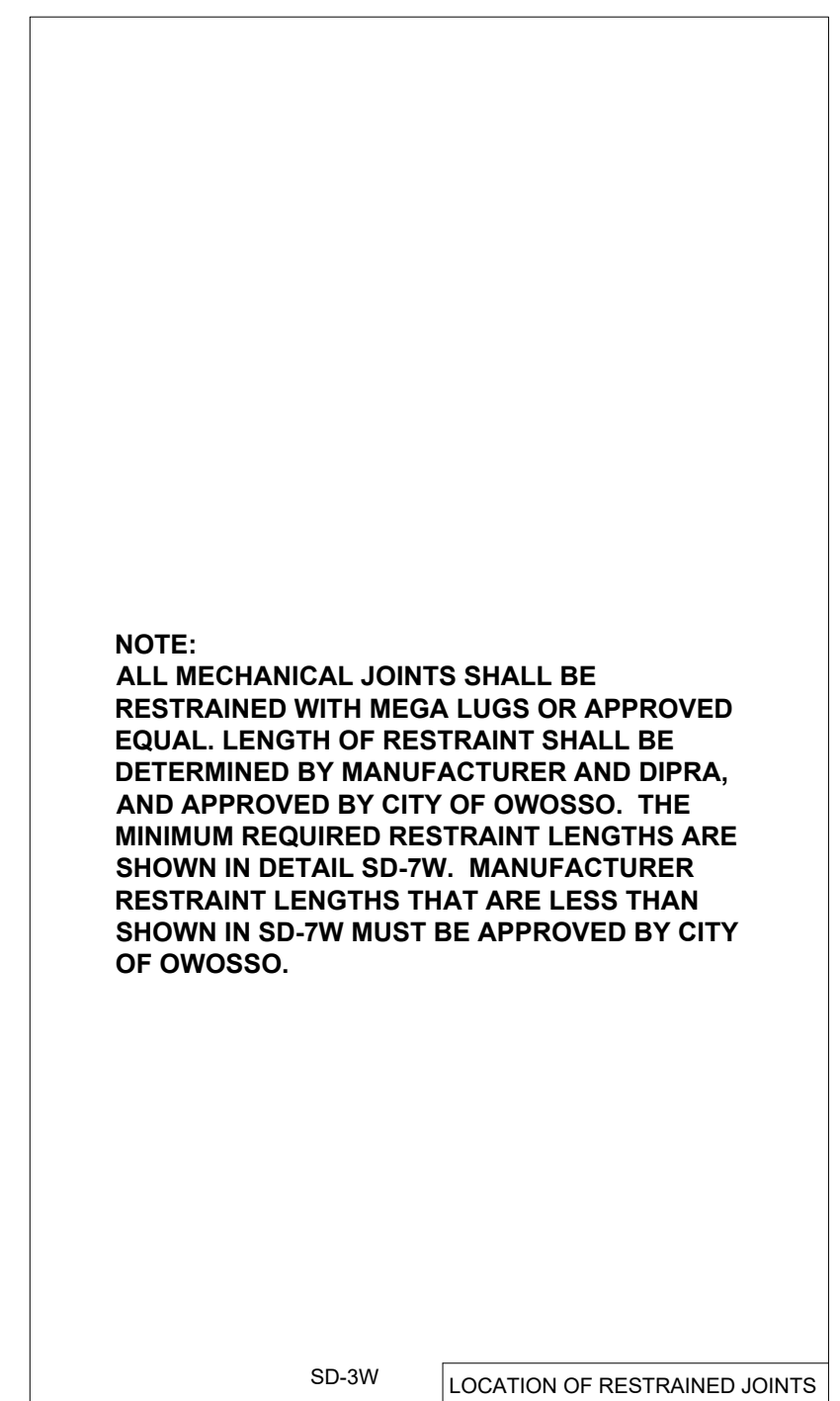
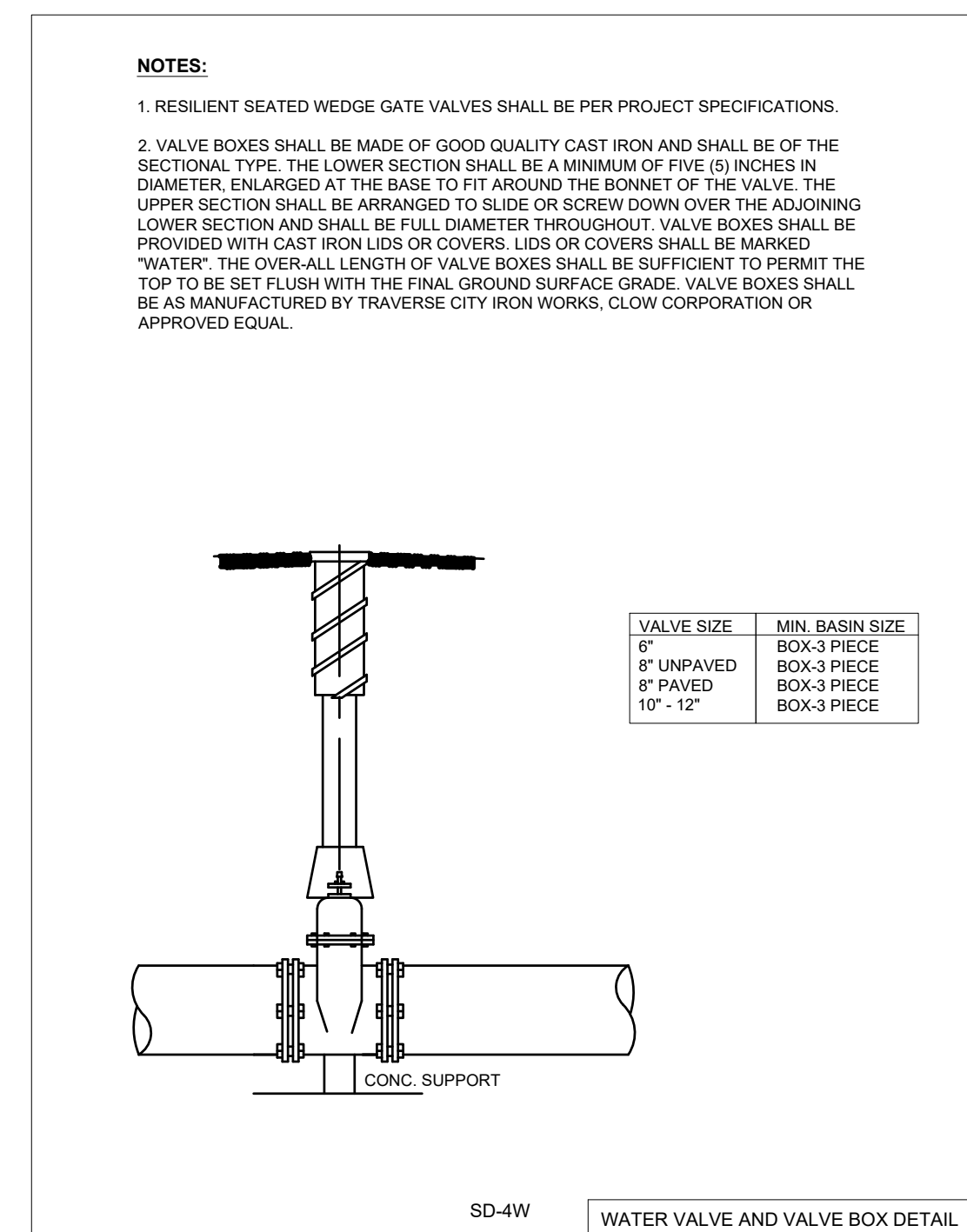
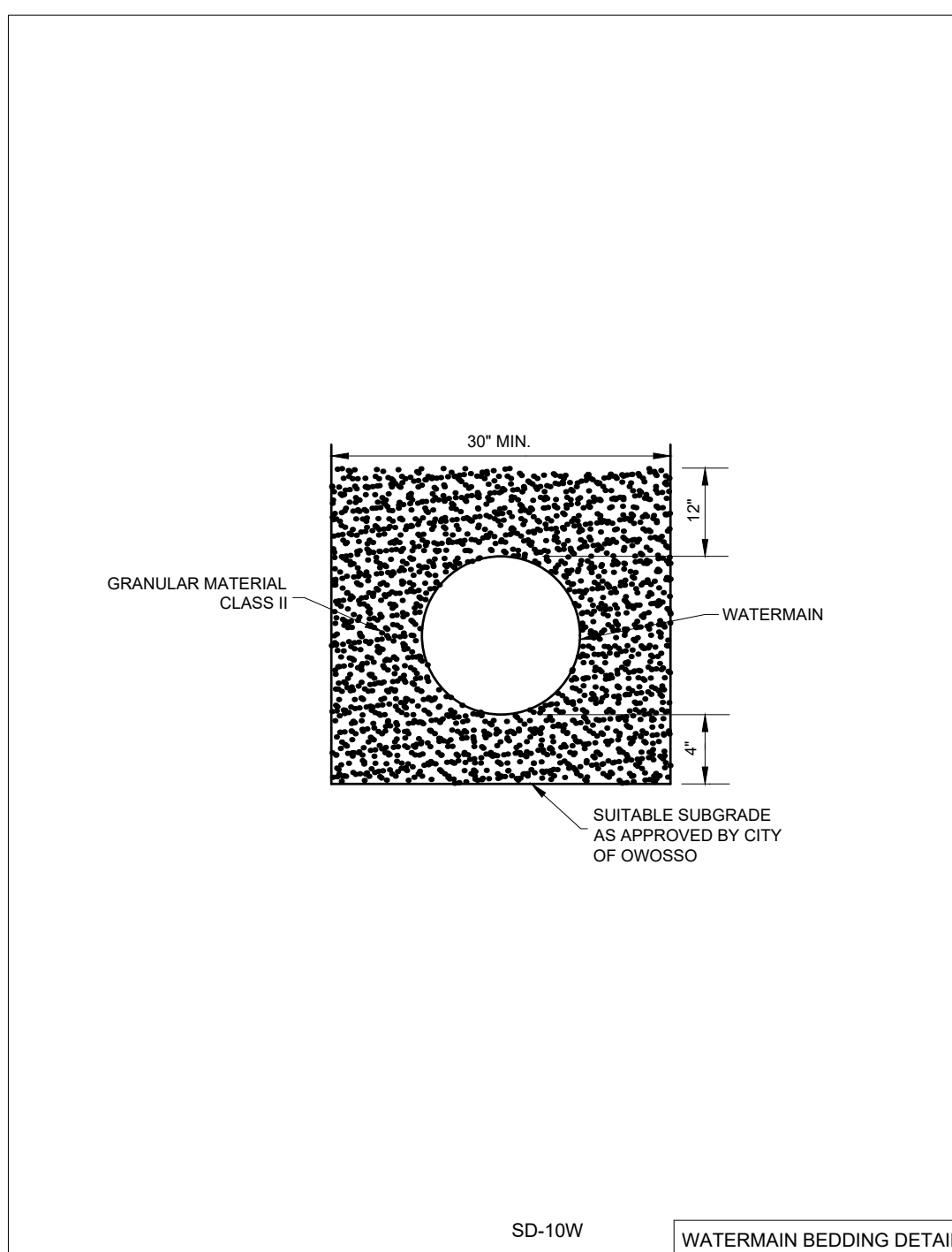
DEFLECTION ANGLE	LENGTH (IN FEET) OF RESTRAINT REQUIRED (2)						
	22 1/2°	33 3/4°	45°	56 1/4°	67 1/2°	78 3/4°	90° OR DEAD END
PIPE							
6"	3	6	11	16	23	29	37
8"	4	8	15	22	31	41	50
10"	5	11	18	28	38	49	61

\* WHEN MANUFACTURER SPECIFICATIONS CALL FOR GREATER RESTRAINT LENGTHS THE GREATER LENGTHS SHALL BE INSTALLED. WHEN THE MANUFACTURER SPECIFICATIONS CALL FOR LESSER RESTRAINT LENGTHS THEN THE ABOVE LENGTHS SHALL BE INSTALLED

1. THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE + WATER HAMMER). FOR OTHER TEST PROCEDURES, ALL VALUES ARE TO BE INCREASED PROPORTIONALLY.

2. IN EACH DIRECTION FROM POINT OF DEFLECTION OR TERMINATION EXCEPT FOR A TEE AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE TEE STEM.

SD-7W MINIMUM PIPE RESTRAINT SCHEDULE



DETAIL OF BLOCK FOR 90° BEND OR TEE  
NO SCALE

DETAIL OF BLOCK FOR 45° BEND  
NO SCALE

DETAIL OF BLOCK FOR 22 1/2° BEND  
NO SCALE

DETAIL OF BLOCK FOR 11 1/4° BEND  
NO SCALE

DETAIL OF BLOCK FOR PLUGS  
NO SCALE

DETAIL OF BLOCK FOR VALVES  
NO SCALE

**NOTE:** TABLE BELOW IS BASED IN WATER MAIN PRESSURE OF 100 P.S.I. WITH NOMAL CLAY SOIL FOR WATER MAIN PRESSURE OF 150 P.S.I., INCREASE THE AREA BY 50%; FOR 180 P.S.I., INCREASE BY 80% AND ETC.. FOR SOFT AND ABNORMAL SOIL CONITIONS, THE THRUST BLOCK SIZE SHALL BE DETERMINED BY THE ENGINEER.

SIZE OF MAIN	PLUGS				90° BENDS OR TEE												45° BENDS												22 1/2° BENDS												11 1/4° BENDS												SIZE OF MAIN
	AA	BB	CC	DD	MINIMUM CONCRETE REQUIRED	A	B	C	D	E	F	MINIMUM CONCRETE REQUIRED	G	H	I	J	K	MINIMUM CONCRETE REQUIRED	L	M	N	O	MINIMUM CONCRETE REQUIRED	P	Q	R	MINIMUM CONCRETE REQUIRED																										
4"	1'-0"	1'-0"	1'-0"	0'-6"	0.04 CYD	1'-0"	1'-0"	1'-0"	0'-8"	0'-6"	0'-6"	0.04 CYD	1'-6"	1'-0"	1'-0"	0'-6"	0'-6"	0.04 CYD	0'-8"	0'-8"	1'-0"	0'-4"	0.03 CYD	0'-6"	0'-6"	1'-0"	0.01 CYD	4"																									
6"	1'-6"	1'-0"	1'-0"	0'-6"	0.06 "	2'-0"	1'-0"	1'-0"	0'-8"	0'-6"	0'-6"	0.07 "	1'-6"	1'-0"	1'-0"	0'-6"	0'-6"	0.04 "	1'-0"	1'-0"	1'-0"	0'-6"	0.03 "	0'-7"	0'-7"	1'-0"	0.01 "	6"																									
8"	2'-0"	1'-6"	1'-0"	0'-9"	0.11 "	2'-0"	2'-0"	1'-0"	0'-10"	1'-0"	0'-9"	0.12 "	2'-0"	1'-0"	1'-0"	0'-6"	0'-6"	0.08 "	1'-6"	1'-0"	1'-0"	0'-6"	0.04 "	0'-9"	0'-9"	1'-0"	0.02 "	8"																									
10"	2'-0"	2'-0"	1'-3"	1'-0"	0.19 "	3'-0"	2'-0"	1'-3"	1'-0"	1'-0"	0'-9"	0.19 "	2'-0"	1'-6"	1'-3"	0'-9"	0'-9"	0.11 "	1'-6"	1'-6"	1'-3"	0'-6"	0.07 "	1'-0"	1'-0"	1'-3"	0.04 "	10"																									
12"	2'-6"	2'-0"	1'-6"	1'-0"	0.28 "	3'-0"	2'-0"	1'-6"	1'-2"	1'-3"	1'-0"	0.32 "	2'-0"	2'-0"	1'-6"	1'-0"	0'-9"	0.15 "	2'-0"	1'-2"	1'-6"	0'-7"	0.08 "	1'-0"	1'-8"	1'-6"	0.05 "	12"																									
14"	3'-0"	2'-6"	1'-9"	1'-3"	0.49 "	3'-0"	2'-6"	1'-9"	1'-4"	1'-6"	1'-3"	0.49 "	3'-0"	2'-0"	1'-9"	1'-0"	1'-0"	0.29 "	2'-0"	1'-6"	1'-9"	0'-9"	0.16 "	1'-6"	1'-4"	1'-9"	0.12 "	14"																									
16"	3'-6"	3'-0"	2'-0"	1'-6"	0.52 "	4'-0"	3'-0"	2'-0"	1'-6"	1'-6"	1'-3"	0.69 "	3'-0"	3'-0"	2'-0"	1'-6"	1'-3"	0.47 "	2'-0"	2'-0"	2'-0"	1'-0"	0.24 "	2'-0"	1'-6"	2'-0"	0.20 "	16"																									
18"	4'-0"	3'-0"	2'-3"	1'-6"	1.00 "	4'-0"	4'-0"	2'-3"	1'-8"	2'-0"	1'-6"	1.06 "	3'-0"	3'-0"	2'-3"	1'-6"	1'-3"	0.51 "	3'-0"	2'-0"	2'-3"	1'-0"	0.48 "	2'-0"	1'-8"	2'-3"	0.24 "	18"																									
20"	4'-0"	4'-0"	2'-6"	2'-0"	1.45 "	5'-0"	4'-6"	2'-6"	2'-3"	1'-9"	1.23 "	4'-0"	3'-0"	2'-6"	1'-6"	1'-6"	0.82 "	3'-0"	2'-6"	2'-6"	1'-3"	0.58 "	2'-0"	1'-10"	2'-6"	0.30 "	20"																										
24"	5'-0"	5'-0"	3'-0"	2'-6"	2.78 "	6'-0"	5'-6"	3'-0"	2'-3"	2'-9"	2.74 "	4'-0"	4'-0"	3'-0"	2'-0"	1'-9"	1.21 "	3'-0"	3'-0"	3'-0"	1'-6"	0.80 "	2'-6"	2'-2"	3'-0"	0.42 "	24"																										
30"	6'-0"	6'-0"	3'-9"	3'-0"	4.96 "	7'-0"	7'-0"	3'-9"	2'-6"	3'-6"	2'-6"	5.39 "	5'-6"	5'-0"	3'-9"	2'-6"	2'-0"	2.14 "	4'-0"	3'-0"	3'-9"	1'-6"	1.35 "	3'-0"	2'-8"	3'-9"	0.98 "	30"																									
36"	8'-0"	6'-0"	4'-6"	3'-0"	8.00 "	8'-0"	7'-6"	4'-6"	3'-0"	3'-9"	2'-9"	8.12 "	6'-0"	6'-0"	4'-6"	3'-0"	2'-6"	4.03 "	5'-0"	4'-0"	4'-6"	2'-0"	2.77 "	3'-0"	3'-2"	4'-6"	1.36 "	36"																									
42"	8'-0"	8'-0"	5'-3"	4'-0"	12.44 "	9'-0"	8'-0"	5'-3"	3'-6"	4'-0"	3'-0"	11.58 "	7'-7"	7'-0"	5'-3"	3'-6"	3'-0"	6.43 "	5'-0"	5'-0"	5'-3"	2'-6"	3.85 "	4'-0"	3'-9"	5'-3"	2.17 "	42"																									

**NOTE:** THE CONCRETE USED FOR BLOCKING SHALL BE A MINIMUM COMPRESSIVE STRENGTH OF 3000 POUNDS PER SQUARE INCH IN TWENTY-EIGHT (28) DAYS.

ISSUE / ISSUED FOR BID / 12/11/2022

PROJ. INGR. PALMER 3A Wellhouse Design  
CADD. MS. SHAWANSEE  
MUNICIPALITY. OWOSSO  
COUNTY. SHAWANSEE  
DATE. 02/20/2020  
PROJ. INGR. AV  
ES. ES

CITY OF OWOSSO  
PALMER 3A WELL HOUSE DESIGN  
CITY OF OWOSSO - WATER MAIN STANDARD DETAILS

DRAWING PATH: P:\0000\_01\0000\2020\070\_Palmer\_3A\_Wellhouse\_Design\_BidDrawings\Civil\Details\2020\070DET.dwg Dec 01, 2022 - 11:35am

COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM



STRUC. ABBR.

Table with 2 columns: ABBR., DESCRIPTION. Includes entries for ALUM, ANSI, ARCH, ASTM, B, BF, BLDG, BLK, BLKG, BOF, BOT, BRG, BRKT, BTWN, C, CIP, CJ, CL, CLR, CMU, CONC, D, DEG, DET, DIA, DIST, DL, E, EA, EF, EJ, EL, ENG, ENTR, EQ, EQUIP, ES, EW, EX, EXP, F, FD, FF, FIN, FT, FTG, G, GA, GALV, GB, GYP, H, HDR, HORIZ, HR, HT, I, IN, INSUL, J, JST, JT, L, LLH, LLV, LONG, LP, LT.

STRUC. ABBR.

Table with 2 columns: ABBR., DESCRIPTION. Includes entries for M, MAX, MBC, MECH, MFR, MIN, MISC, MO, N, NORTH, NA, NIC, No, NOM, NTS, O, ON CENTER, OH, P, POUNDS PER CUBIC FOOT, PCF, PL, PLMB, PLYWD, PREFAB, PSF, PSI, PVC, Q, QTY, R, REIN, REINFORCE, REOD, REV, RO, RS, RT, S, SIM, SOG, SQ FT, SQ IN, STL, T, T&B, T&G, TEMP, TOB, TOC, TOM, TOS, TOW, TYP, U, UNLESS NOTED OTHERWISE, V, VERT, VIF, W, WITH, W/O, WD, WF, WWF, Y, YD.

WOOD FRAMING NOTES

- 1. ALL FRAMING SHALL BE SPRUCE-PINE-FIR (S.P.F.) NO. 2 OR BETTER; Fb=875 PSI; E=1.4x10^6 PSI; Fv=135 PSI; Fcperp=425 PSI.
2. HANGERS/CONNECTORS SHALL BE 18 GA GALVANIZED, SIMPSON STRONG-TIE OR EQUAL. USE HANGERS FOR THE USE AS RECOMMENDED BY THE MANUFACTURER.
3. SHEATHING SHALL BE APA GRADED AS FOLLOWS:
A. ROOF SHEATHING: 5/8" MIN, 40/20 EXPOSURE 1
4. INSTALL SOLID 2X S4S BLOCKING AT ALL RAFTER BEARINGS. ADJUST BLOCK DEPTH AS REQUIRED FOR AIR SPACE.
5. FASTEN MEMBERS IN ACCORDANCE WITH MICHIGAN BUILDING CODE TABLE 2304.9.1, UNLESS OTHERWISE NOTED.
6. WHERE NOTED, NAIL SIZES ARE BASED ON THE FOLLOWING MINIMUM SIZES

Table with 3 columns: SIZE, DESIGNATION, MIN SIZE. Lists various wood framing sizes like 6d BOX, 8d COMMON, 10d BOX, etc.

BUILDING LOADS

BUILDING CLASSIFICATION II

Table with 2 columns: LOAD TYPE, VALUE. Includes LIVE LOADS (1. UNIFORM FLOOR LIVE LOAD, 2. ROOF LOAD, 3. INTERIOR WALL LATERAL LIVE LOAD), DEAD LOADS (1. MATERIAL DEAD LOAD, 2. MECHANICAL DEAD LOAD), SNOW LOADS (BALANCED SNOW, 1. GROUND SNOW LOAD, etc.), WIND LOADS (MAX DRIFT SURCHARGE, WIND LOADS), and DRIFT SNOW AT ROOF FAN.

Table with 2 columns: WIND LOADS, FORMULAS. Includes VASD=VULT(0.6)^1/2 and QASD=QULT(0.6).

Table with 2 columns: LOAD OR VARIABLE, VALUE. Includes ULTIMATE DESIGN WIND SPEED (115 mph), RISK CATEGORY (II), WIND EXPOSURE CATEGORY (C), INTERNAL PRESSURE COEFFICIENT (±0.18), MAIN WIND FORCE RESISTING SYSTEM (31 psf), etc.

EARTHQUAKE DESIGN DATA

Table with 2 columns: LOAD VARIABLE, VALUE. Includes RISK CATEGORY (II), SEISMIC IMPORTANCE FACTOR (1.0), MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETER (0.081 g), etc.

ASSUMED SOIL BEARING STRENGTH

CONTRACTOR SHALL VERIFY SOIL BEARING CAPACITY PRIOR TO CONSTRUCTION

NOTES

- 1. APPLICABLE CODE IS 2015 MICHIGAN BUILDING CODE.
2. APPLICABLE TECHNICAL CODE IS ASCE/SEI 7-10.
3. WIND LOAD BASED ON ASCE 7-10
A. MWFS: CHAPTER 28, PART 2, METHOD 2
B. C&C, CHAPTER 30, PART 1, METHOD 1
4. LOADS ARE BASED ON SECTION 16 OF MBC 2015 UNLESS OTHERWISE NOTED.

SOILS AND EARTHWORK

- 1. SOIL INVESTIGATIONS HAVE NOT BEEN PERFORMED FOR THIS PROJECT. PRESUMPTIVE LOAD-BEARING VALUES TO BE IN ACCORDANCE WITH MICHIGAN BUILDING CODE TABLE 1806.3, UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL VERIFY SOIL BEARING CAPACITY PRIOR TO CONSTRUCTION.
3. INCLUDE IN THE WORK PROVIDING ALL EQUIPMENT, MATERIAL, AND QUALIFIED LABOR NECESSARY FOR EXCAVATION, SHORING, DEWATERING SYSTEMS, BACKFILL, AND COMPACTION OF SOILS, AS REQUIRED TO CONSTRUCT STRUCTURES TO THE LINE AND GRADE AS SHOWN ON THE PLANS.
4. FOR PROTECTION OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL TELEPHONE (800) 482-7171 NOT LATER THAN THREE BUSINESS DAYS PRIOR TO EXCAVATING IN THE VICINITY OF UTILITY LINES. ALL "MISS DIG" PARTICIPATING MEMBERS WILL BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING OWNERS WHO MAY NOT BE PART OF THE "MISS DIG" ALERT SYSTEM.
5. EXCAVATE TO ELEVATIONS AND DIMENSIONS SHOWN ON THE PLANS WITHIN A TOLERANCE OF +/- 0.10 FEET. EXCAVATE BY HAND TO FINAL GRADE FOR FOOTINGS.
6. NOTIFY THE ENGINEER FOR AN INSPECTION WHEN THE EXCAVATION HAS REACHED SUB-GRADE ELEVATION. IF UNSUITABLE BEARING MATERIALS ARE ENCOUNTERED AT SUB-GRADE ELEVATION, EXCAVATE AND REPLACE SUCH MATERIALS AS DIRECTED BY ENGINEER.
7. SATISFACTORY SOIL MATERIALS ARE DEFINED AS GRANULAR MATERIALS CLASSIFIED AS GW, GP, GM, SW, SP, SW-SM, SP-SM OR SM BY THE UNIFIED SOILS CLASSIFICATION SYSTEM, ASTM D2487. LIMIT AMOUNT OF FINE MATERIAL PASSING NO. 200 SIEVE TO LESS THAN 5% MAXIMUM.
8. UNSATISFACTORY SOIL MATERIALS ARE DEFINED AS SOILS CLASSIFIED AS GC, SW-SC, SP-SC, SC, ML, MH, CL, CH, OL, OH, AND PT BY THE UNIFIED SOILS CLASSIFICATION SYSTEM, OR ANY ORGANIC MATERIAL. "MARL" IS AN UNSATISFACTORY SOIL MATERIAL.
9. BACKFILL ALL STRUCTURAL WORK WITH SATISFACTORY SOIL MATERIALS AND ENGINEERED FILL AS SHOWN ON PLANS. DO NOT BACKFILL WITH FROZEN MATERIALS. DO NOT PLACE ROCKS LARGER THAN 3" DIAMETER IN BACKFILL.
10. COMPACT SOILS BELOW FOOTINGS TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS DETERMINED BY MODIFIED PROCTOR, ASTM D1557.
11. COMPACT BACKFILL IN LAYERS TO MINIMUM 95% MAXIMUM DENSITY AS DETERMINED BY MODIFIED PROCTOR, OR MICHIGAN CONE TEST.

CONCRETE NOTES

- 1. PROVIDE MINIMUM 28-DAY CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI (fc = 4,000 PSI). PROVIDE NORMAL WEIGHT CONCRETE, WITH 6% ± 1.5% ENTRAINED AIR FOR EXTERIOR APPLICATIONS. MAXIMUM W/C RATIO < 0.45, AND MAXIMUM 4" SLUMP, UNLESS SUPER-PLASTICIZERS ARE USED. USE OF SUPER-PLASTICIZERS IS SUBJECT TO PRIOR APPROVAL BY THE ENGINEER. DO NOT PROVIDE AIR CONTENT > 3% FOR TROWEL FINISHED SLABS. DO NOT PROVIDE AIR CONTENT > 3% FOR TROWEL FINISHED SLABS.
2. PROVIDE READY-MIX CONCRETE CONFORMING TO ASTM C-94.
3. CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ACI 117 301, 305R, 306.1, AND 308.1, LATEST APPLICABLE EDITION.
4. PLACE ANCHOR RODS SET IN CONCRETE TO RECEIVE STRUCTURAL STEEL WITHIN TOLERANCES SPECIFIED IN THE LATEST APPLICABLE AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" IN LIEU OF TOLERANCES SPECIFIED IN ACI "STANDARD SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS".
5. REINFORCING STEEL CONFORMING TO ASTM A-615, GRADE 60 IS REQUIRED. PLACE REINFORCING STEEL IN CONFORMANCE WITH CRSI MANUAL OF STANDARD PRACTICE.
6. REINFORCEMENT SHALL NOT BE WELDED.
7. POST INSTALLED ANCHORS OR REBAR SHALL BE ANCHORED INTO CONCRETE WITH POWERS PE1000+ EPOXY INJECTION ADHESIVE, OR AN APPROVED EQUAL. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION INSTRUCTIONS. SEE DETAILS FOR MINIMUM EMBEDMENT.

Table with 3 columns: BAR SIZE, TOP BARS, ALL OTHER BARS. Includes REINFORCEMENT LAP SPICE LENGTH+ and values for fc = 3,000 psi, fc = 4,000 psi, fc = 5,000 psi.

- \* TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF FRESH CONCRETE BELOW BAR.
+ LAP SPICE LENGTHS SHOWN ARE CLASS B SPICE LENGTHS FOR UNCOATED OR GALVANIZED BARS WITH CLEAR COVER OF 4b OR MORE AND WITH CLEAR SPACING OF 2db OR MORE. INCREASE LAP LENGTHS BY 50% FOR EPOXY COATED OR DUAL ZINC-EPOXY COATED BARS WITH CLEAR COVER LESS THAN 3db OR WITH CLEAR SPACING LESS THAN 6db. INCREASE LAP LENGTHS BY 20% FOR EPOXY COATED OR DUAL ZINC-EPOXY COATED BARS WITH CLEAR COVER OF 3db OR MORE AND WITH CLEAR SPACING OF 6db OR MORE. SPICE LENGTHS SHOWN ARE FOR NORMAL WEIGHT CONCRETE AND REINFORCEMENT WITH A YIELD STRENGTH OF 60,000 PSI (60 KSI).

- 8. REINFORCING STEEL SHALL HAVE A MINIMUM CONCRETE COVER AS LISTED BELOW UNLESS OTHERWISE NOTED.
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED EARTH: 3"
B. CONCRETE CAST AGAINST FORMS BUT EXPOSED TO EARTH OR WEATHER
1. NO. 5 OR SMALLER 1 1/2"
2. GREATER THAN NO. 5 2"
C. SLAB ON GRADE: 2" FROM T/S LAB

MASONRY NOTES

- 1. CONSTRUCT MASONRY IN ACCORDANCE WITH ACI 530.1/ASCE 6-CURRENT EDITION.
2. PROVIDE NORMAL WEIGHT CONCRETE UNIT MASONRY UNITS MANUFACTURED IN ACCORDANCE WITH ASTM C90, Fm = 1,900 PSI.
3. GROUT VOIDS AS INDICATED ON THE DRAWINGS, WITH GROUT CONFORMING TO ASTM C476. GROUT BLOCK CORES UNDER BEAM BEARINGS AND AT LEAST 8" EACH SIDE OF BEARING. PROVIDE SLUMP BETWEEN 8 AND 11 INCHES.
4. LAY UNIT MASONRY IN A RUNNING BOND PATTERN UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE PLANS. TOOLS ALL JOINTS, ALL SURFACES.
5. MORTAR SHALL BE TYPE S COMPLYING WITH ASTM C270 IS REQUIRED.
6. PROTECT MASONRY BY COVERING TOP OF WALLS WITH WATERPROOF SHEETING AT THE END OF EACH DAY. DO NOT LAY WET OR FROZEN BRICK, STONE, OR BLOCK. PROVIDE TEMPORARY HEAT WHEN AMBIENT TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT. MAINTAIN MINIMUM 50 DEGREE TEMPERATURE FOR 48 HOURS AFTER PLACING MASONRY.
7. GROUT ALL CORES CONTAINING REBAR AND VOIDS WHERE INDICATED.
8. ALL CORES BELOW GRADE SHALL BE GROUTED SOLID UP TO FINISHED FLOOR ELEVATION.
9. CORES CONTAINING EXPANSION OR ADHESIVE ANCHORS SHALL BE GROUTED SOLID.
10. ALL VERTICAL REINFORCEMENT SHALL BE CONTINUOUS THROUGH BOND BEAMS. ALL HORIZONTAL REINFORCEMENT IN BOND BEAMS SHALL BE CONTINUOUS AROUND CORNERS OR HAVE BENT BARS OF THE SAME SIZE AND NUMBER WITH A LAP OF 48 BAR DIAMETERS (12" MINIMUM).
11. COORDINATE WALL OPENINGS AND OTHER WALL CONFIGURATIONS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, CIVIL, AND OTHER DISCIPLINES.
12. POST INSTALLED ANCHORS OR REBAR SHALL BE ANCHORED INTO MASONRY WITH POWERS PE1000+ EPOXY INJECTION ADHESIVE, OR AN APPROVED EQUAL. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLED INSTRUCTIONS. SEE DETAILS FOR MINIMUM EMBEDMENT.
13. PROVIDE HORIZONTAL JOINT REINFORCEMENT IN ALTERNATE COURSES (16" OC) USING 9 GAUGE DURATRUS OR EQUAL.

Table with 4 columns: BAR SIZE, MINIMUM LAP SPICE (fm = 1,500 psi), MINIMUM LAP SPICE (fm = 1,900 psi), COMMENTS. Lists bar sizes #3 through #8.

- \* LAP SPICE LENGTHS SHOWN ARE FOR UNCOATED BARS WITH 2" MINIMUM CLEAR COVER AND 2" MINIMUM CLEAR SPACING. INCREASE LAP LENGTH BY 50% IF USING EPOXY COATED BARS. LAP LENGTHS SHOWN ARE FOR REINFORCEMENT WITH A YIELD STRENGTH OF 60,000 PSI (60 KSI).

GENERAL NOTES - STRUCTURAL

- 1. THE GENERAL STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS OCCUR BETWEEN DOCUMENTS, THE STRICTEST PROVISION SHALL GOVERN.
2. THE CONTRACTOR SHALL LIMIT THE AMOUNT OF LOAD IMPOSED UPON THE STRUCTURAL FRAMING SYSTEM DURING CONSTRUCTION. LOADS, INCLUDING CONSTRUCTION LOADS, MUST NOT EXCEED THE DESIGN CAPACITY OF THE FRAMING AT THE TIME THE LOADS ARE IMPOSED. THE CONTRACTOR SHALL INFORM THE ENGINEER OF POTENTIAL CONSTRUCTION LOADS DEEMED EXCESSIVE BY THE CONTRACTOR.
3. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED SELF-SUPPORTING, STABLE STRUCTURE UNLESS OTHERWISE INDICATED. THEY DO NOT INDICATE THE MEANS OR METHOD OF CONSTRUCTION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE, CONSTRUCTION SEQUENCE AND PROVIDE ALL MEASURES OR TEMPORARY BRACING NECESSARY TO ENSURE THE STABILITY AND SAFETY OF THE STRUCTURE AND ITS COMPONENTS. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR THE BUILDING, SHORING FOR EARTH BANKS, FORMS, SCAFFOLDING, PLANKING, SAFETY NETS, SUPPORT AND BRACING FOR CRANES AND GIN POLES, ETC.
4. ALL MATERIALS AND WORKMANSHIP SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS OF THE GOVERNING BUILDING CODE: MICHIGAN BUILDING CODE, CURRENT EDITION.
5. ALL SHOP DRAWINGS PREPARED BY SUPPLIERS, SUBCONTRACTORS, ETC. SHALL BE REVIEWED BY THE ARCHITECT/ENGINEER FOR CONFORMANCE WITH DESIGN INTENT ONLY. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION. ENGINEERS APPROVAL OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR FIT, QUANTITY AND CONSTRUCTION QUALITY CONTROL.
6. STRUCTURAL DRAWINGS ARE INTENDED TO BE USED WITH ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL RELEVANT DIMENSIONS AND ELEVATIONS FOR EQUIPMENT INSTALLATIONS AGAINST APPROVED MANUFACTURERS CERTIFIED EQUIPMENT DRAWINGS AND COORDINATING ANY REQUIREMENTS WITH SHOP DRAWINGS AND WORK.
7. MECHANICAL FRAMING LOADS, OPENINGS AND SUPPORT STRUCTURE ARE SHOWN FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH MECHANICAL AND OTHER TRADES TO VERIFY EQUIPMENT SIZE AND LOCATIONS. ANY CHANGES IN EQUIPMENT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD.
8. THE CONTRACTOR SHALL INFORM THE ENGINEER/ARCHITECT OF ANY DEVIATIONS FROM THE DRAWINGS. DO NOT CUT OR MODIFY STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
9. DRAWINGS ARE INTENDED TO BE PRINTED PER THE SCALE PROVIDED. THE CONTRACTOR SHALL CONTACT THE ENGINEER IF ADDITIONAL DIMENSIONS ARE REQUIRED.
10. CONTRACTOR SHALL NOT MIX GALVANIZED AND STAINLESS STEEL AT ANY TIME. ANY METAL PARTS IN CONTACT WITH OTHER METAL PARTS SHALL BE OF A SIMILAR METAL.
11. CONTRACTOR SHALL RECOGNIZE EFFECTS OF THERMAL MOVEMENTS AND MOISTURE CONTENT CHANGES OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD AND CONSIDER THESE EFFECTS DURING CONSTRUCTION AND/OR ERECTION SEQUENCES.
12. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE AND FUNCTIONING SYSTEMS, INCLUDING BUT NOT LIMITED TO, PROVIDING (AT NO ADDITIONAL COST) ITEMS NOT SPECIFICALLY SHOWN IN THESE DRAWINGS WHICH ARE NORMALLY CONSIDERED NECESSARY.

STRUCTURAL SYMBOLS LEGEND

Complex legend area containing VIEW REFERENCES, NOTES & ANNOTATIONS, CONNECTION TYPES, INDICATOR LINES & POINTS, and BUILDING ELEMENTS. Includes symbols for SIM, DETAIL INDICATOR, SECTION DETAIL INDICATOR, WALL SECTION INDICATION, BUILDING SECTION INDICATOR, EXTERIOR ELEVATION INDICATOR, INTERIOR ELEVATION INDICATOR, and various connection types like BOLTED, BOTTOM FLANGE BRACING, etc.

SYSTEM SPECIFIC SYMBOLS

System specific symbols for MASONRY SYSTEM, REBAR FRAMING SYSTEM, and FOUNDATION SYSTEM. Includes symbols for WALL, BEAM, COLUMN, TOP BARS, BOTTOM BARS, FOOTING STEP LOCATION, COLUMN INDICATOR, PIER INDICATOR, FOOTING INDICATOR, SPREAD FOOTING, and WALL FOOTING.



OHM-ADVISORS.COM

12/05/2022

ISSUE: ISSUED FOR PERMIT REVISIONS: 10/28/2022 12/01/2022

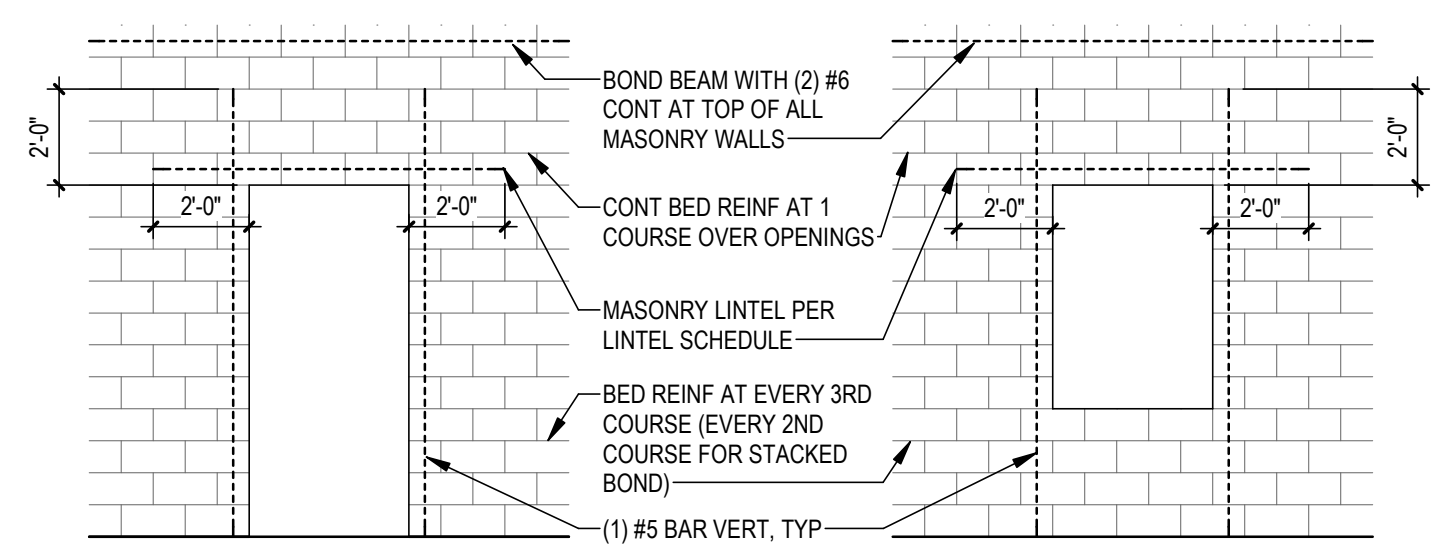
ISSUE FOR PA 399 CONSTRUCTION PERMIT ISSUED FOR BID

CITY OF OWOSO PALMER 3A WELLHOUSE DESIGN

STRUCTURAL NOTES AND SYMBOLS

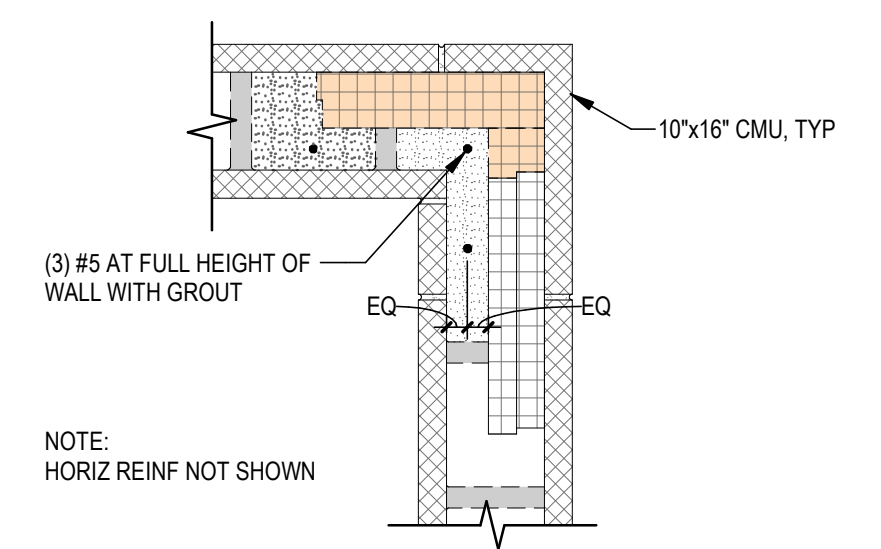
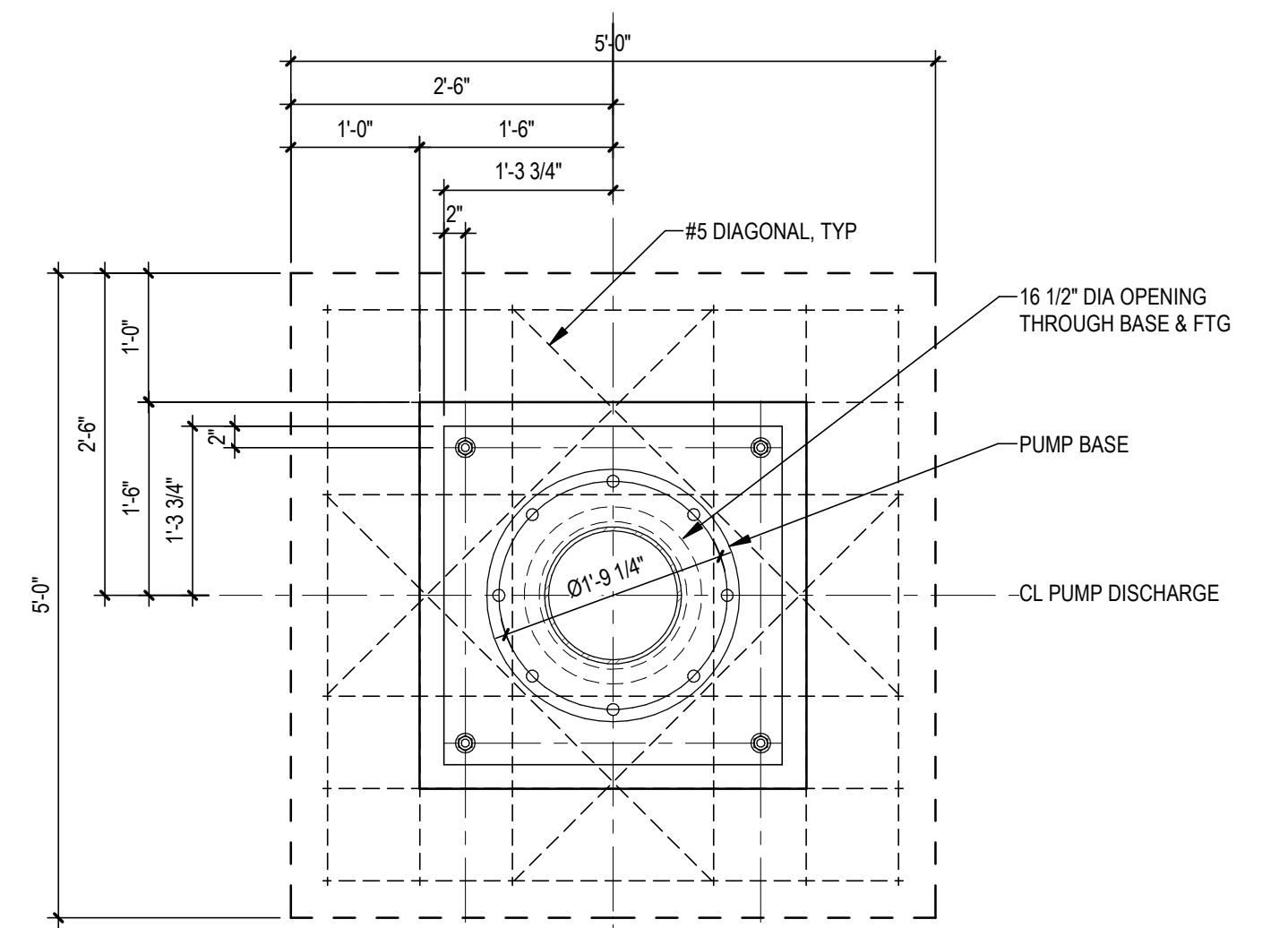
COPYRIGHT 2022 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM



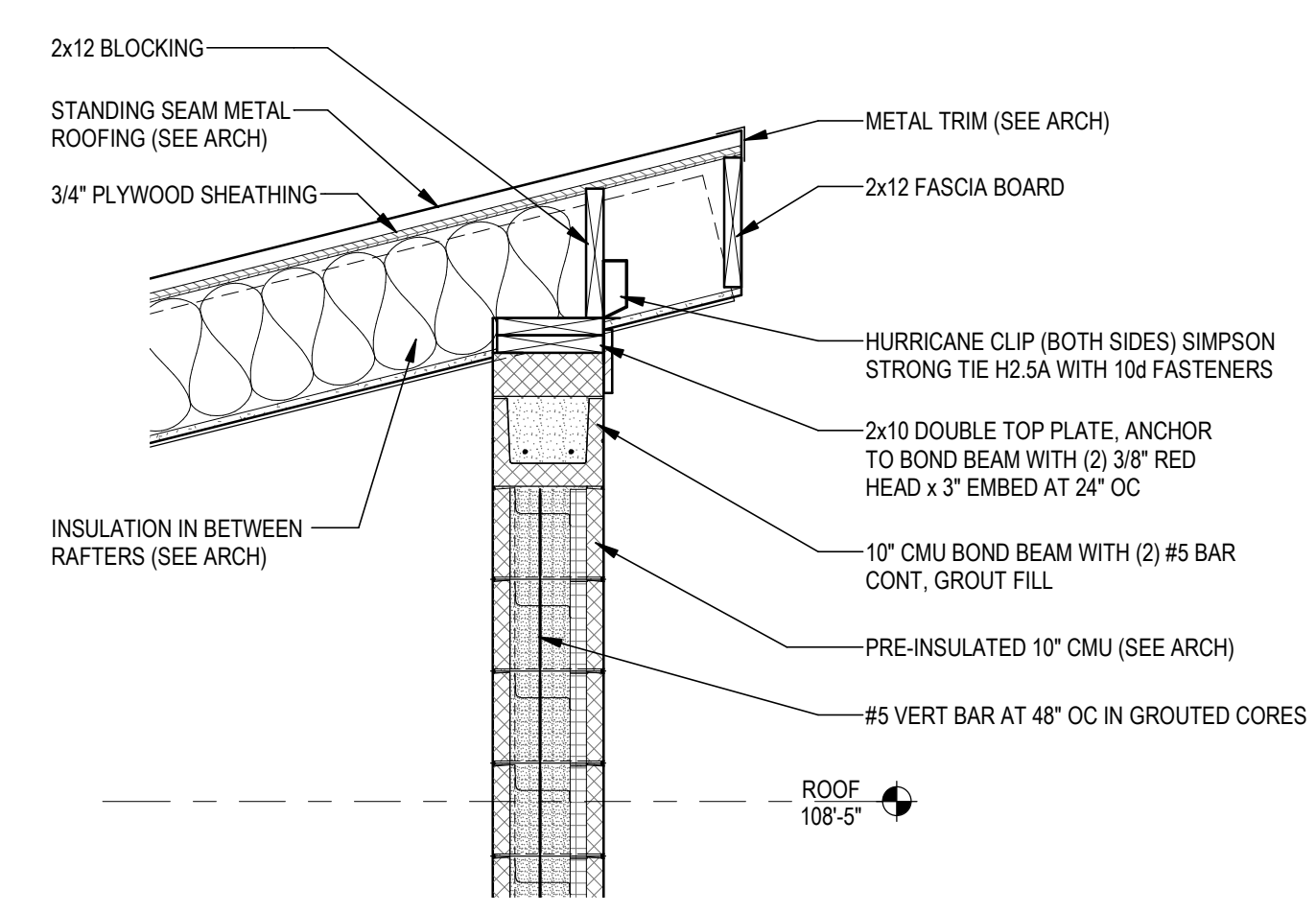


NOTE: PROVIDE VERTICAL BAR IN ALL CORNERS, 16" MIN

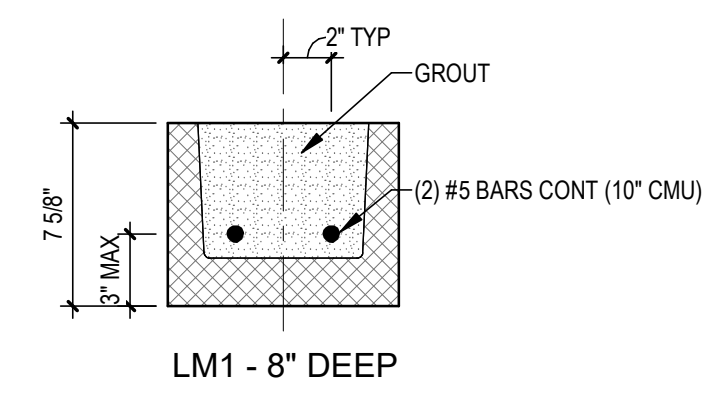
9 TYP MASONRY OPENING REINFORCING IN ELEVATION  
1/4" = 1'-0"



8 CMU CORNER REINFORCEMENT  
1" = 1'-0"

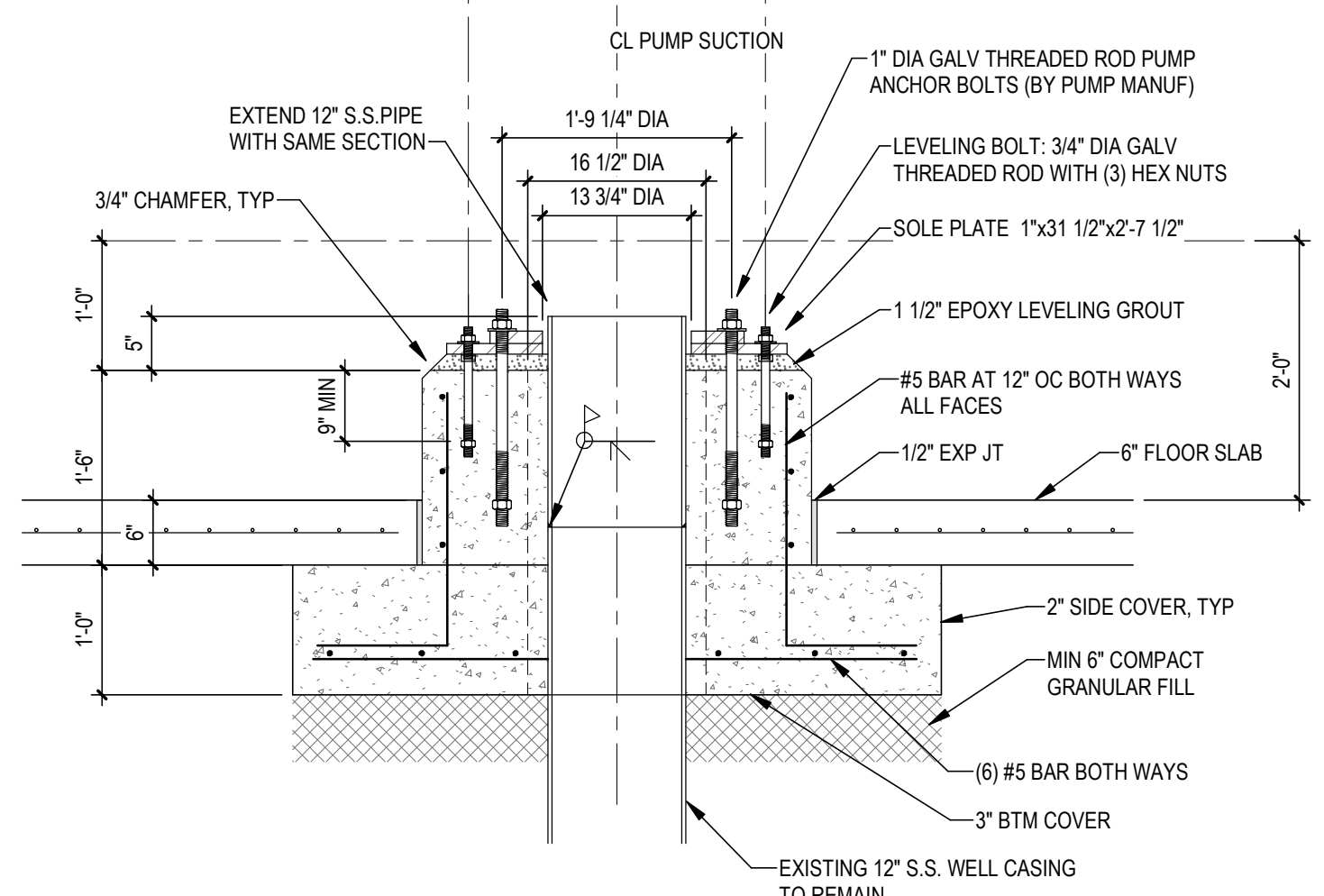


7 TOP OF WALL CONNECTION  
3/4" = 1'-0"

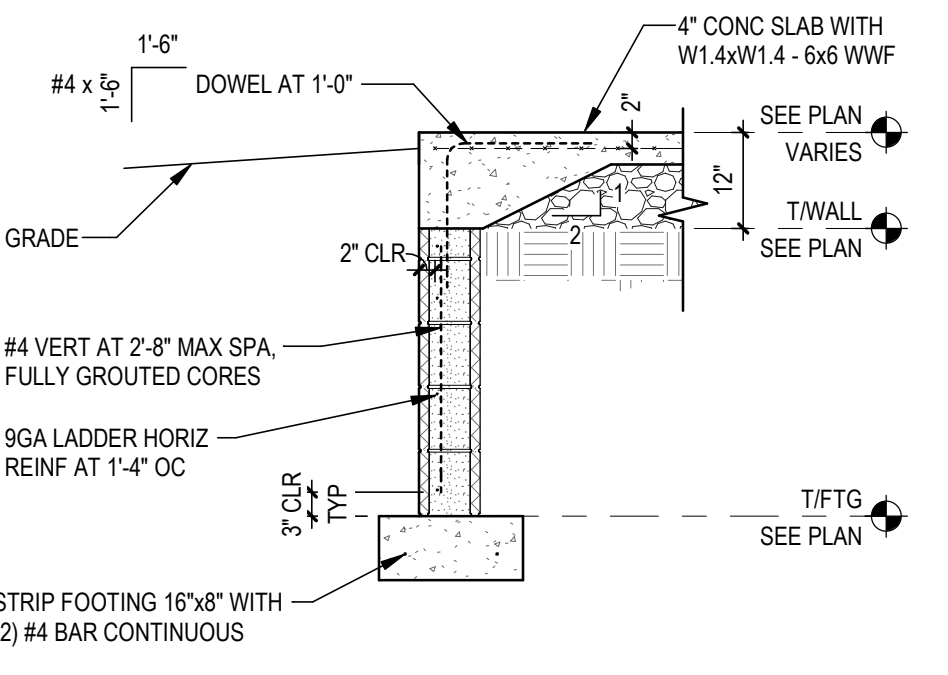


NOTES:  
 1. ALL DOOR & LOUVER OPENINGS IN CMU WALLS TO HAVE LM1 LINTEL.  
 2. EXTEND VERTICAL REINFORCING THROUGH LINTELS & BOND BEAMS.

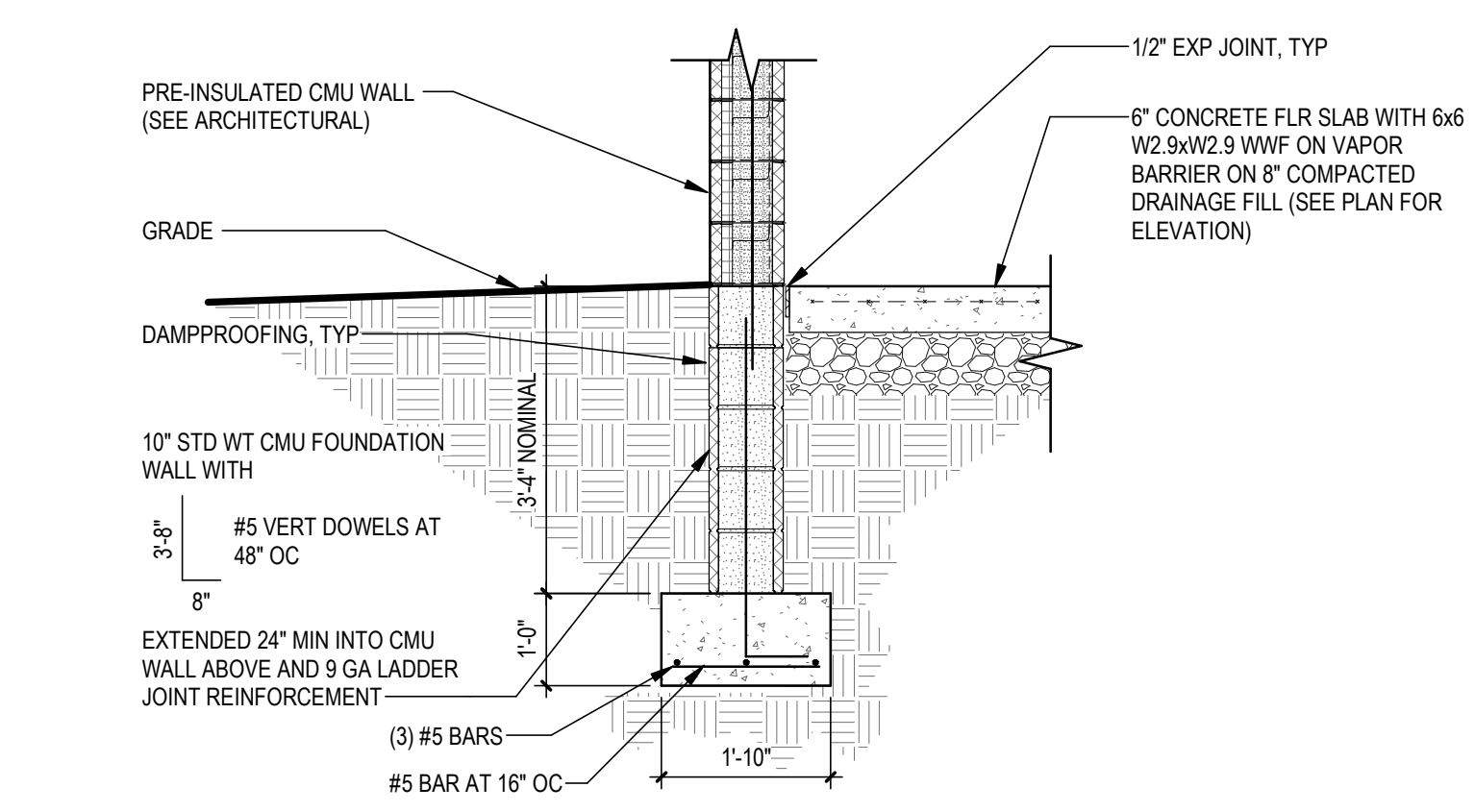
6 TYP CMU MASONRY LINTELS  
1 1/2" = 1'-0"



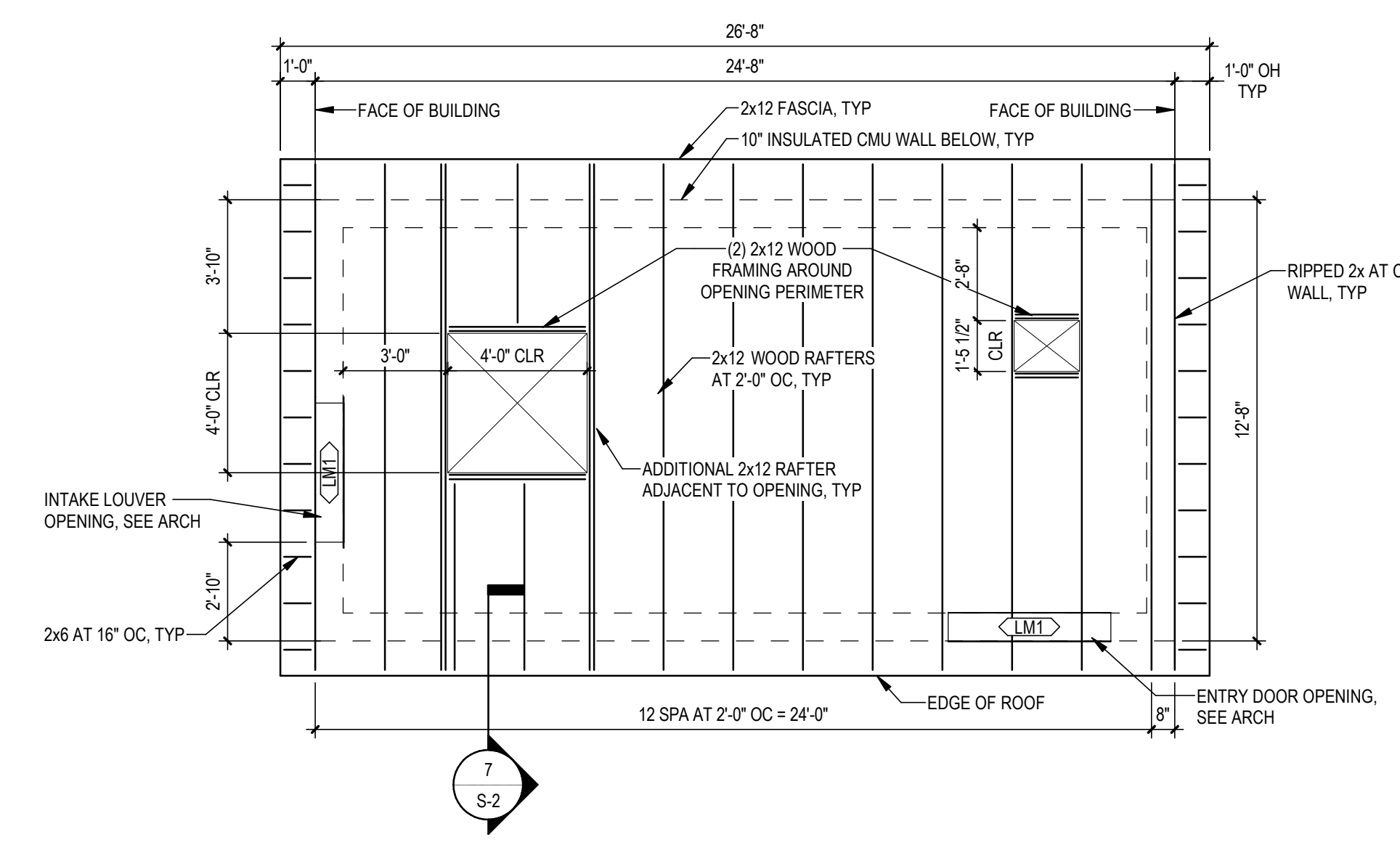
5 PUMP CONCRETE PAD  
3/4" = 1'-0"



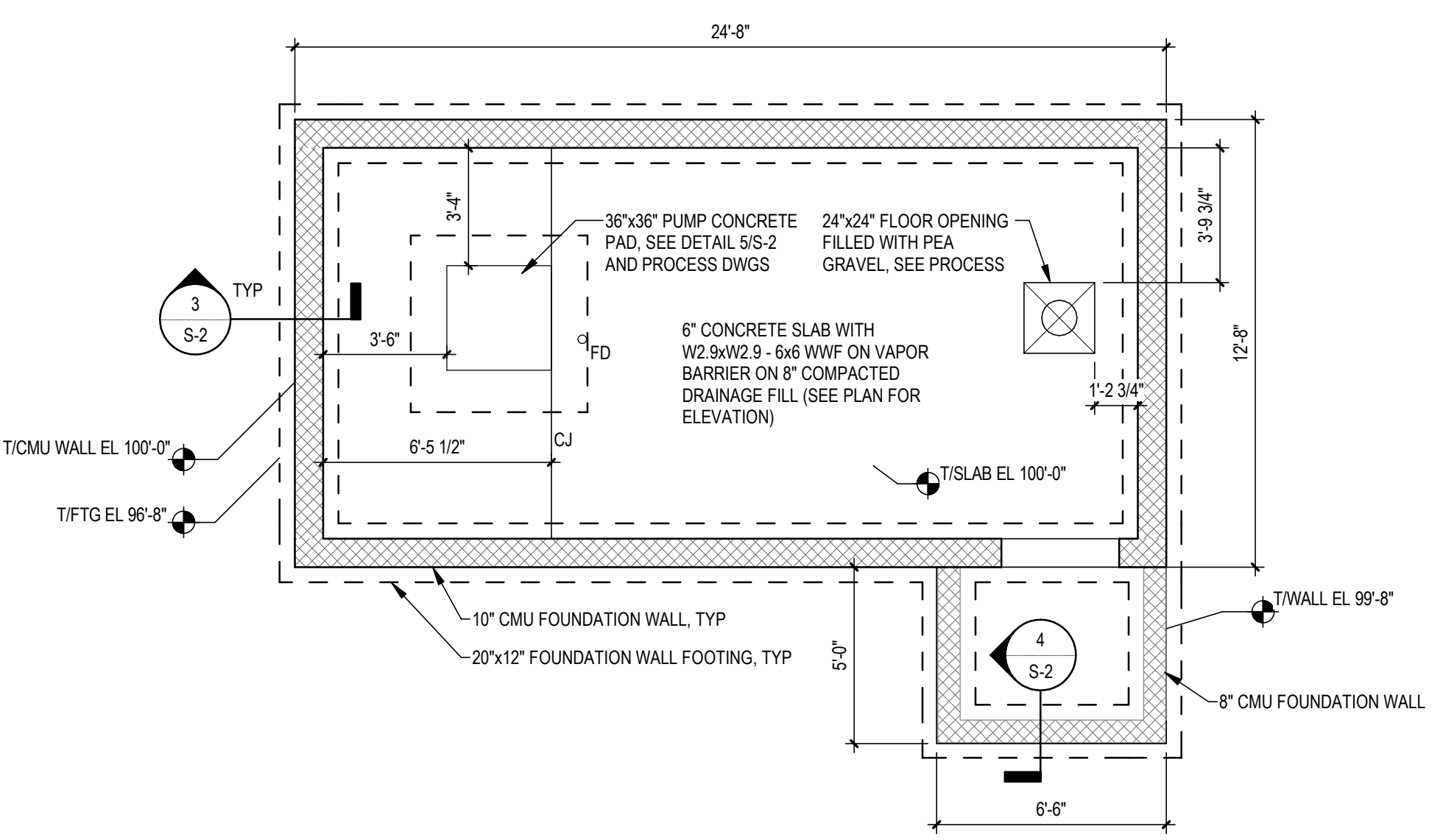
4 STOOP FOUNDATION  
1/2" = 1'-0"



3 TYP FOUNDATION WALL SECTION  
1/2" = 1'-0"



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



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

DATE	12/05/2022
PROJ NUMBER	0202-22-0070
PROJ MGR	AV SHAWASSEE
ISSUE	ISSUED FOR PERMIT
REVISIONS	10/28/2022 12/01/2022
	ISSUE FOR PA 309 CONSTRUCTION PERMIT
	ISSUED FOR BID

CITY OF OWOSO  
 PALMER 3A WELLHOUSE DESIGN

FOUNDATION PLAN, FRAMING PLAN AND DETAILS



2022-12-01 16:39:14  
BIN: 363/02022-22-0070 Palmer 3A Wellhouse 020220070\_A\_Palmer3AWellhouse\_2021\_CEN.v1

### ABBREVIATIONS

SEE LEGENDS ON A-002 FOR ACCESSORY ABBREVIATIONS

A	AND
@	AT
ACT	ACOUSTICAL CEILING TILE
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
B	
BOT	BOTTOM
BRK	BRICK
BSMT	BASEMENT
C	
CJ	CONTROL JOINT
CL	CENTER LINE
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
D	
DN	DOWN
DS	DOWNSPOUT
E	
EA	EACH
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMER	EMERGENCY
EQ	EQUAL
EXST	EXISTING
F	
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR
FHC	FIRE HOSE CABINET
FO	FACE OF
FRTW	FIRE RETARDANT TREATED WOOD
FSP	FIRE STANDPIPE
FT	FOOT / FEET
FTG	FOOTING
G	
GB	GYPSUM BOARD
GYP	GYPSUM
H	
HD	HEAD
HDW	HARDWARE
HVAC	HEATING-VENTILATING-AIR CONDITIONING
HW	HOT WATER

### ABBREVIATIONS

SEE LEGENDS ON A-002 FOR ACCESSORY ABBREVIATIONS

I	INCH / INCHES
L	POUND
LDG	LANDING LEVEL
M	
MAX	MAXIMUM
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
N	
NA	NOT APPLICABLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
No.	NUMBER
NTS	NOT TO SCALE
O	
OC	ON CENTER
OPP	OPPOSITE
OPP HND	OPPOSITE HAND
P	
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
Q	
QTY	QUANTITY
R	
R	RISER
RD	ROOF DRAIN
RO	ROUGH OPENING
S	
SAB	SOUND ATTENUATION BLANKET INSULATION
SD	SMOKE DETECTOR
SF	SQUARE FOOT
SIM	SIMILAR
SQ IN	SQUARE INCH
T	
T	TREAD
T&B	TOP & BOTTOM
TYP	TYPICAL
U	
UNO	UNLESS NOTED OTHERWISE
V	
VIF	VERIFY IN FIELD
W	
W	WITH
W/O	WITHOUT
WWF	WELDED WIRE FABRIC

### ARCHITECTURAL SYMBOLS LEGEND

**VIEW REFERENCES**

- 1-X-XXX DETAIL INDICATOR
- 1-X-XXX SECTION DETAIL INDICATOR
- 1/X-XXX ALTERNATE DETAIL / SECTION DETAIL INDICATOR
- 1-X-XXX WALL SECTION INDICATOR
- 1-X-XXX BUILDING SECTION INDICATOR
- 1-X-XXX EXTERIOR ELEVATION INDICATOR
- 1-X-XXX INTERIOR ELEVATION INDICATOR
- 1-X-XXX 3D VIEW INDICATOR

**NOTES & ANNOTATIONS**

- e INDICATES EXISTING
- XX SHEET KEYNOTE INDICATOR
- 00 00 00 A REFERENCE KEYNOTE INDICATOR
- REVISION INDICATOR
- ROOM NAME ROOM IDENTIFIER
- 101 ROOM NUMBER
- 150 SF ROOM AREA
- 1,254 Occ OCC. COUNT
- M&P WALL TYPE INDICATOR
- W1 WINDOW / LOUVER INDICATOR (REFER TO WINDOW SCHEDULE)
- 101A DOOR WINDOW (REFER TO DOOR SCHEDULE)
- GL-1 GLAZING INDICATOR (REFER TO PROJECT MANUAL)
- GLAZING MODIFIER (REFER TO STOREFRONT ELEVATIONS)
- N NORTH INDICATOR
- PLAN NORTH
- TRUE NORTH

**INDICATOR LINES**

- LEVEL ELEVATION MARK
- XXX-XXX
- SEE 1 / A101 MATCHLINE
- EXISTING GRID LINE
- PROPOSED GRID LINE
- BUILDING LINE
- SEPARATION INDICATOR
- PROPOSED EXISTING
- PROPERTY LINE INDICATOR
- N/S 90.00 E/W 100' - 0'
- EXISTING CORNER PROPOSED CORNER

**FINISHES**

- ROOM FINISH INDICATOR
- ROOM NUMBER
- WALL FINISH
- BASE
- FLOOR FINISH
- FINISH INDICATOR
- 6-4" FINISH EXTENT INDICATOR
- CT-LVT TRANSITION STRIP INDICATOR
- FF&E
- S2436-12-RF CASEWORK INDICATOR (REFER TO INTERIOR ELEVATIONS)
- VISUAL DISPLAY BOARD INDICATOR
- CB = CHALKBOARD
- MB = MARKER BOARD
- TB = TACK BOARD
- TS = TACK STRIP
- LENGTH
- ACCESSORY, FURNITURE, FIXTURE, AND EQUIPMENT INDICATOR
- TC-1
- SIGNAGE INDICATOR (REFER TO SCHEDULE)

**BUILDING ELEMENTS**

- NEW CONSTRUCTION
- NEW MASONRY CONSTRUCTION
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- DOORS
- CLEARANCE LINES

**ACCESSIBILITY**

- 60" DIAMETER WHEELCHAIR TURNING SPACE ICC A117.1 - 304.3
- T-SHAPED WHEELCHAIR TURNING SPACE ICC A117.1 - 304.3
- CLEAR FLOOR SPACE ICC A117.1 - 305.3
- INTERNATIONAL SYMBOL OF ACCESSIBILITY ICC A117.1 - 703.6.3.1

### MATERIAL SYMBOL LEGEND

CONCRETE	STEEL	RIGID INSULATION	CONCRETE MASONRY UNITS
ROUGH WOOD	SHIM	PLYWOOD	GYPSUM WALL BOARD
EARTH / COMPACT FILL	POROUS FILL	SPRAY-FOAM INSULATION	

### GENERAL NOTES - ARCHITECTURAL

- DO NOT SCALE DRAWINGS. IF DIMENSIONS CANNOT BE DETERMINED OR DOCUMENTS ARE IN CONFLICT, THE CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ARCHITECT PRIOR TO CONTINUATION OF WORK.
- ALL WALL DIMENSIONS ARE TO FACE OF STUD OR MASONRY, UNO.
- FIELD VERIFY ALL PROJECT CONDITIONS PRIOR TO THE START OF WORK, AND AS NEEDED THROUGHOUT THE DURATION OF CONSTRUCTION. BRING ANY DISCREPANCIES WHICH MAY SIGNIFICANTLY AFFECT NEW CONSTRUCTION WORK TO THE ATTENTION OF THE ARCHITECT FOR REVIEW.
- ALL WOOD BLOCKING AND BACKING SHALL BE FIRE-RETARDANT TREATED, UNO.
- INFORMATION SHOWN IN ONE LOCATION ON THE DRAWINGS IS THE SAME AS IF SHOWN ON MULTIPLE LOCATIONS.
- TYPICAL CONDITIONS ARE NOTED ONLY ONCE.
- COORDINATE OPENINGS AND PENETRATIONS BETWEEN TRADES.
- FLOORS MUST BE MADE LEVEL TO NO LESS THAN 1/8" IN 10', USING A 10' STRAIGHTEDGE.
- PROVIDE REQUIRED FILLERS, SEALANT, OR TRIM AS NECESSARY TO CLOSE GAPS BETWEEN ADJACENT MATERIALS.

#### Summary of Governing Regulations

Jurisdiction	City	County	State	Remarks
Code-Enforcement	Owosso Township	Shawassee	Michigan	
Zoning	Owosso Township			
State Fire Marshal Review	No			

Code	Title	Edition	Local Amendment (Y/N)
Building Code	Michigan Building Code	2015	No
Mechanical Code	Michigan Mechanical Code	2015	No
Electrical Code	National Electric Code (NFPA 70)	2017	No
Plumbing Code	Michigan Plumbing Code	2018	No
Fire Prevention Code	International Fire Code	2015	No
Energy Code	Michigan Uniform Energy Code	2015	No
Fuel Gas Code	International Fuel Gas Code	2015	No

#### General Building Summary

MBC 2015

**Project Description**  
Insulated architectural concrete masonry well house with single slope standing seam metal roof to replace the adjacent to-be-demolished abandoned Palmer 3 well with new pump.

Project Summary	Remarks
[Chapter 3] Use & Occupancy Classification	U
[Chapter 5] General Building Heights & Areas	Allowed: 40'-0" Actual: 13'-3"
[Table 504.3] Height:	40'-0" 13'-3"
[Table 504.4] Stories:	1 1
[Section 505] Mezzanine:	No
[Section 505.3] Equipment Platform:	No
[Section 506.1.3] Basement:	No
[Table 506.2] Area:	5,500 SF 313 SF
[Chapter 6] Types of Construction	VB
[Chapter 7] Fire & Smoke Protection Features	N/A

ASHRAE 90.1 2010

#### Energy Efficiency

Climate Zone	Space Category	Compliance Path
[Table B1-1] 5	[Section 5.1.2] Nonresidential	[Section 5.2] Trade-Off Option

### GENERAL NOTES - FLOOR PLAN

- FIRST FLOOR REFERENCE ELEVATION 100'-0" = 776.50'
- DO NOT SCALE DRAWINGS. IF DIMENSIONS CANNOT BE DETERMINED OR DOCUMENTS ARE IN CONFLICT, THE CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ARCHITECT PRIOR TO CONTINUATION OF WORK.
- ALL MASONRY DIMENSIONS ARE NOMINAL UNO.

### GENERAL NOTES - REF. CEILING PLAN

- REFER TO MECHANICAL, AND ELECTRICAL DRAWINGS FOR QUANTITY AND TYPE OF CEILING MOUNTED FIXTURES / DEVICES
- REFERENCE MECHANICAL AND ELECTRICAL DRAWINGS FOR MOUNTING LOCATIONS OF ITEMS
- REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE SCHEDULE
- REFER TO MECHANICAL DRAWINGS FOR FAN AND UNIT HEATER SCHEDULES

### GENERAL NOTES - ROOF PLAN

- COORDINATE PENETRATIONS AND ROOF MOUNTED EQUIPMENT WITH MECHANICAL, PLUMBING, ELECTRICAL AND STRUCTURAL DRAWINGS
- ALL ROOF PENETRATIONS SHALL BE SEALED WITH APPROPRIATE MATERIAL
- ALL EXPOSED METAL ELEMENTS TO BE PRE-FINISHED, COLOR AS SELECTED BY ARCHITECT
- REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION ON FINISHES & INSTALLATION REQUIREMENTS

### SHEET KEYNOTES

AC.1	CLEAR OPENING OF HATCH OVERHEAD
AC.2	REFER TO MECHANICAL
AE.1	PRE-FINISHED ALUMINUM GUTTER AND DOWNSPOUT; PROVIDE SPLASHBLOCK
AE.2	48"X48" EQUIPMENT HATCH
AE.4	EXHAUST FAN; REF: MECHANICAL
AE.6	VENT PIPE; REF: MECH/ PLUMBING
AP.1	WELL AND PIPING; REF: PROCESS PLANS
AP.2	24"X24" FLOOR PENETRATION, FILLED W/ MIN 1'-0" DEPTH PEA GRAVEL
AP.3	LINE OF CLEAR VERTICAL LIFT EQUIPMENT HATCH ABOVE
AP.4	CONCRETE PEDESTAL; REF: STRUCTURAL
AP.5	LOUVER; REF: MECHANICAL
AP.6	FLOOR DRAIN; REF: MECHANICAL

### CODE PLAN LEGEND

**ROOM NAME**  
101  
1,254 Occ

**ROOM NAME**  
ROOM NUMBER  
NUMBER OF OCCUPANTS

**XXX CALCULATED**  
XXX CAPACITY

(X'-X')

● Path Label →

CALCULATED OCCUPANT LOAD AT EGRESS CAPACITY OF EGRESS COMPONENT

TRAVEL DISTANCE TO NEAREST EXIT

PATH OF EGRESS TRAVEL  
TRAVEL DISTANCE TO EXITS = 300 FT MAX  
COMMON PATH OF TRAVEL = 75' MAX  
DEAD ENDS = 20' MAX

### PORTABLE FIRE EXTINGUISHERS

MULTI-PURPOSE CHEMICAL (CLASS ABC)

FIRE EXTINGUISHERS

FE

48" MAX. MOUNTING HEIGHT

### FINISH PLAN LEGEND

**ROOM FINISH INDICATOR**

ROOM NAME AND NUMBER PLUS GENERAL ROOM FINISH INFORMATION. FINISH TAGS SHALL APPLY TO ALL LIKE MATERIALS WITHIN A ROOM (UNO).

**FINISH LEGEND**  
FINISH LEGEND IS GENERAL. REFER TO SPECIFICATIONS FOR SPECIFIC FINISH INFORMATION. MULTIPLE FINISH TYPES ARE DENOTED BY NUMBER FOLLOWING ABBREVIATION.

ROOM NUMBER →

WALL FINISH (SEE ABOVE) → PT-2

BASE (SEE ABOVE) → VB-1

FLOOR FINISH (SEE ABOVE) → CPT-P

DENOTES PATTERN DETAIL REFER TO SHEET KEYNOTES ABOVE

FINISH EXTENTS → PT-2

### REFLECTED CEILING PLAN LEGEND

**CEILING TYPES**

CA-1 CEILING TYPE

X'-X'

FRP-1 REINFORCED FIBERGLASS WALL PANEL

**LIGHT FIXTURES**  
(REFER TO ELECTRICAL DRAWINGS)

SURFACE / CEILING MOUNT

(INT.) (EXT.) WALL MOUNT

INTERIOR EMERGENCY WALL PACK

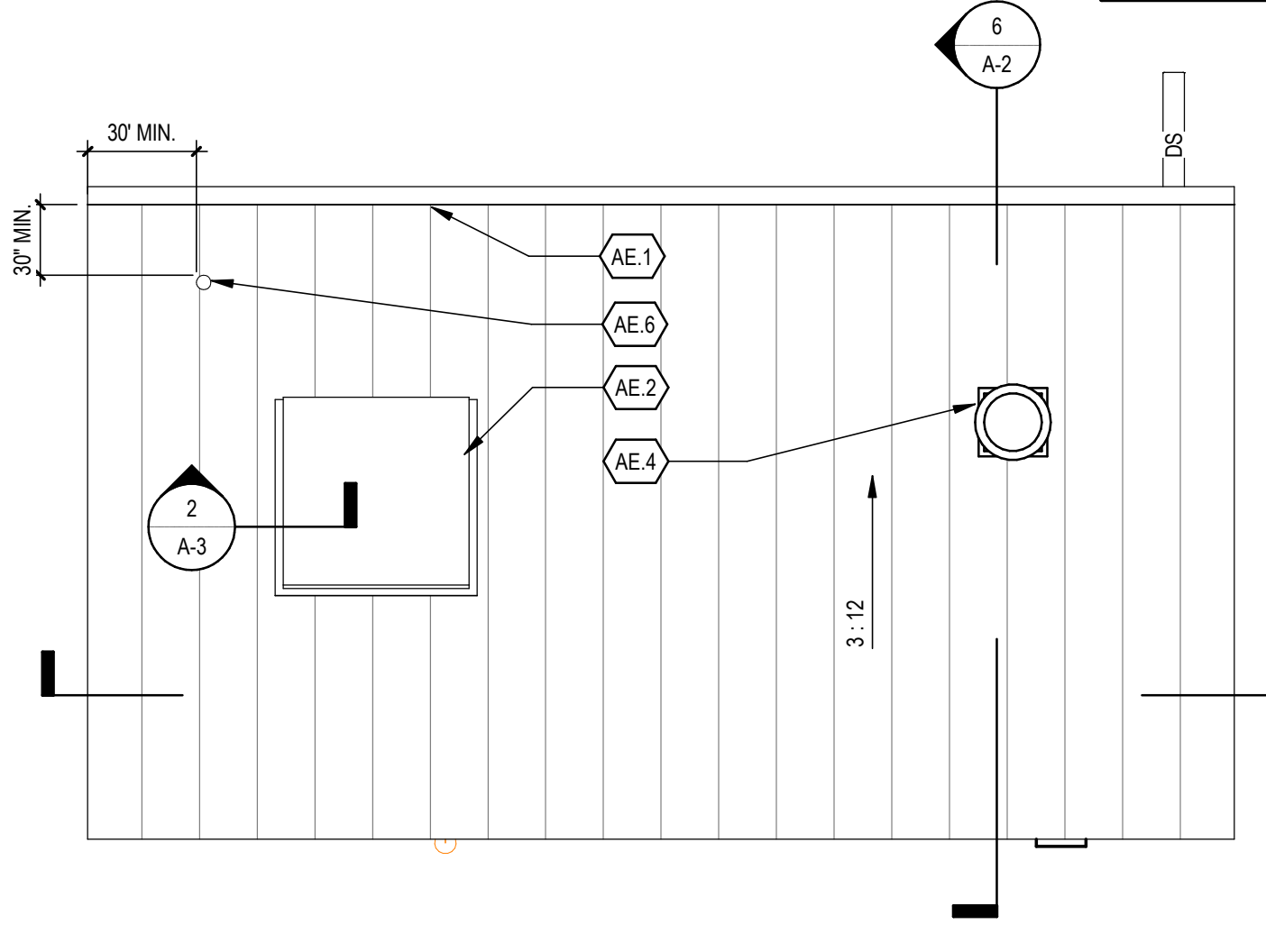
EXIT SIGN (WALL) (CEILING)

### ROOF LEGEND

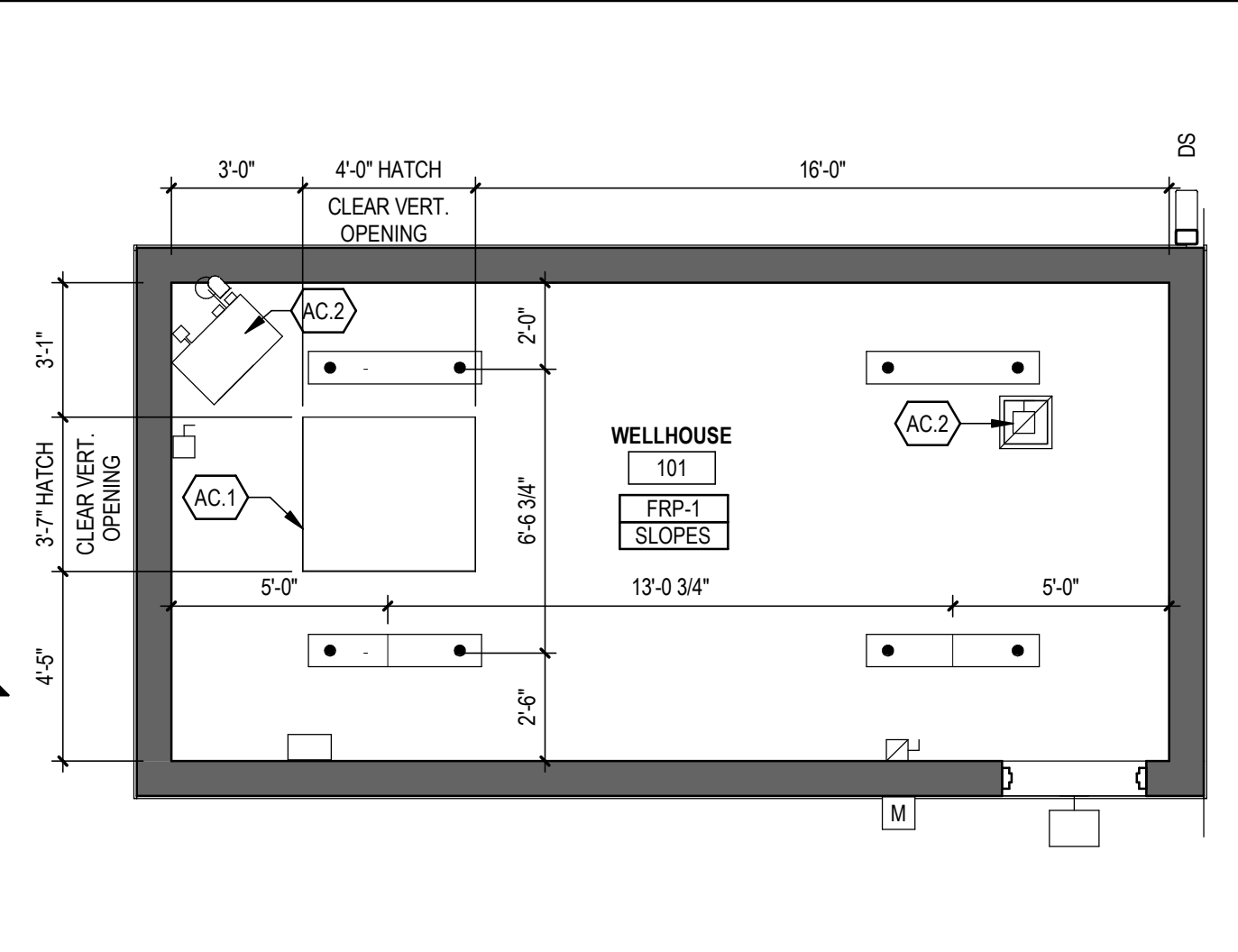
METAL - STANDING SEAM

DS DOWN SPOUT

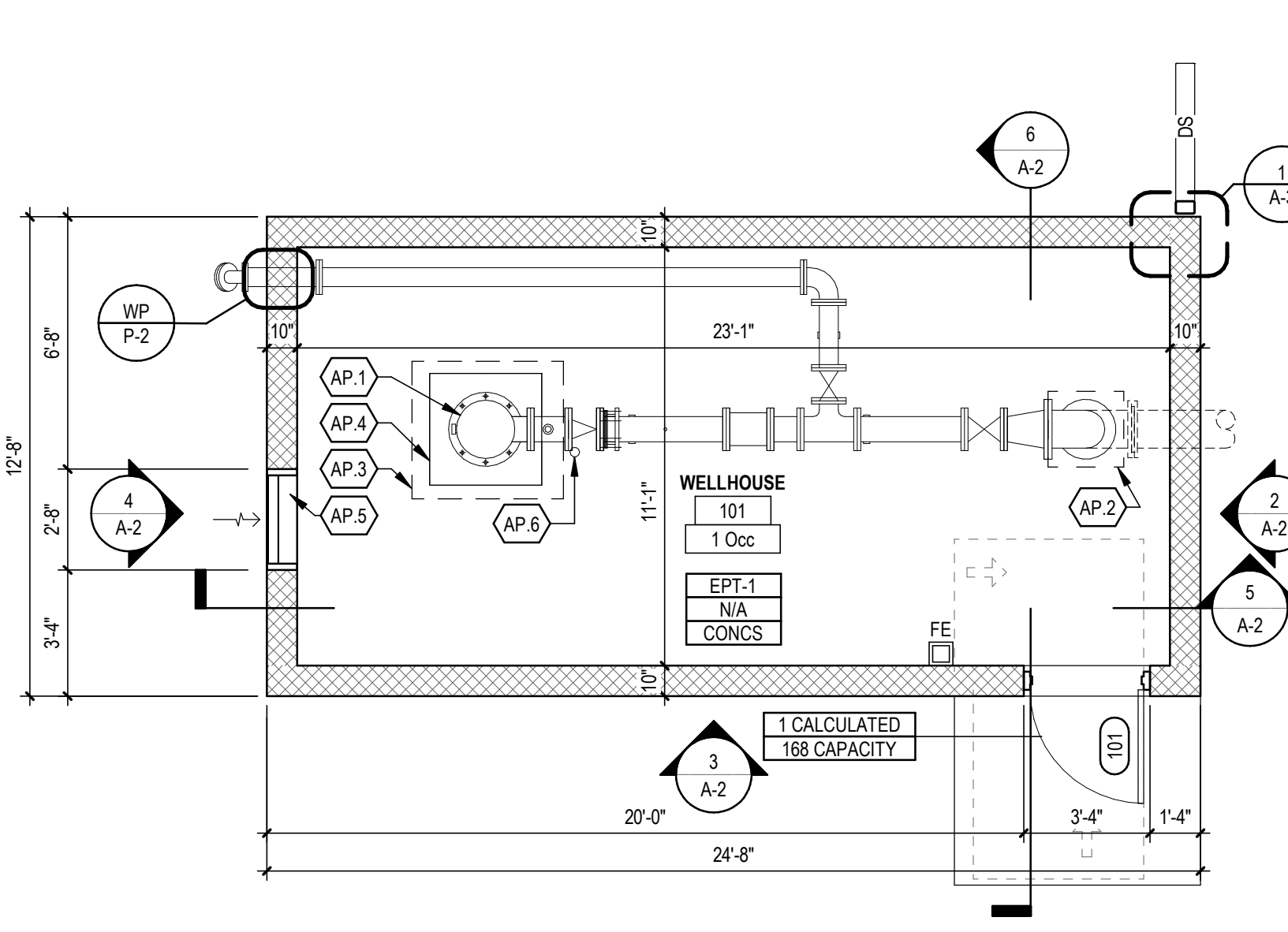
X.12 ROOF SLOPE



**3 ROOF PLAN**  
1/4" = 1'-0"



**2 REFLECTED CEILING PLAN**  
1/4" = 1'-0"



**1 FLOOR PLAN**  
1/4" = 1'-0"



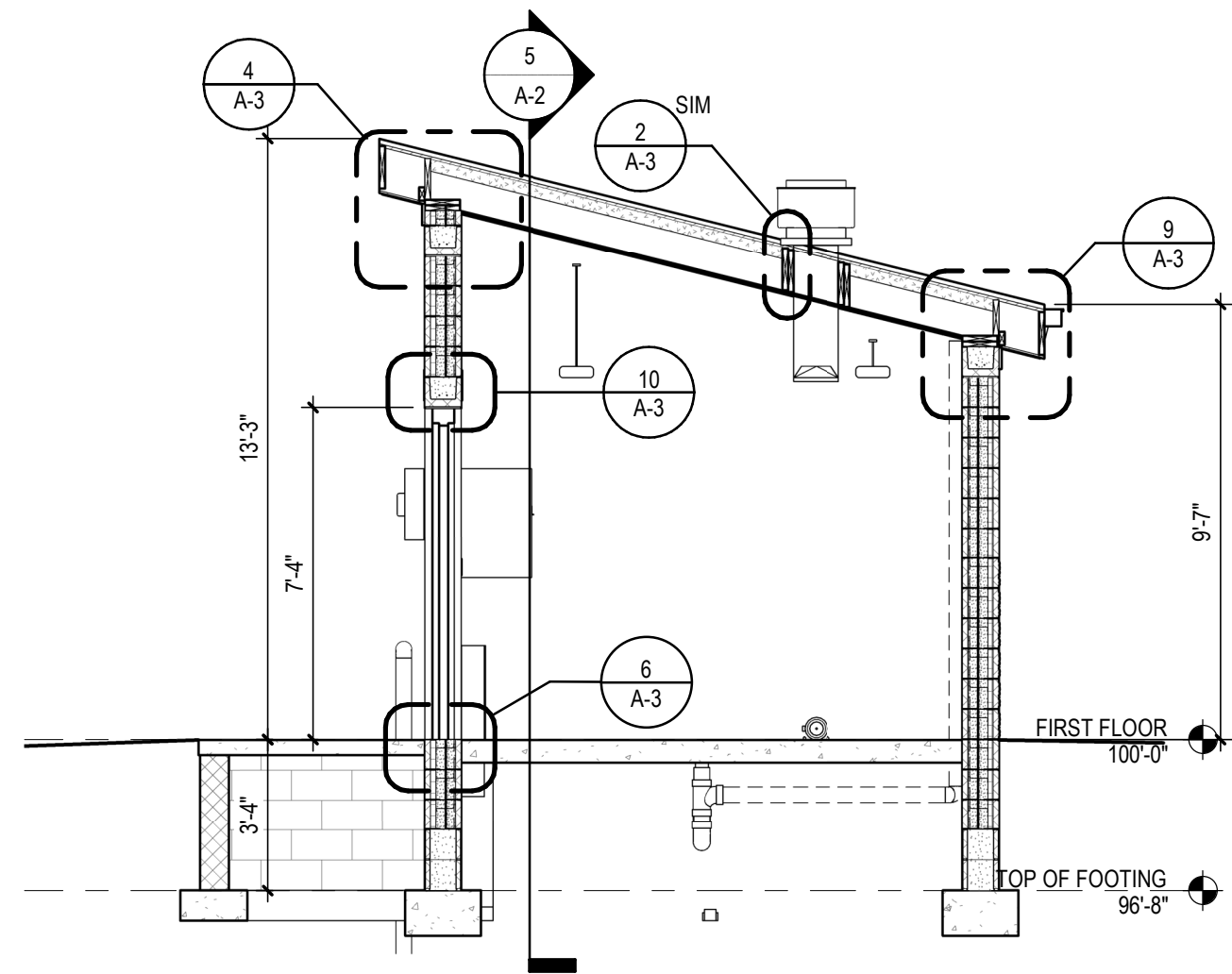
OHM-ADVISORS.COM

12/05/2022  
10/28/2022  
12/01/2022  
ISSUE FOR PERMIT  
ISSUE FOR PA 309 CONSTRUCTION PERMIT  
ISSUED FOR BID

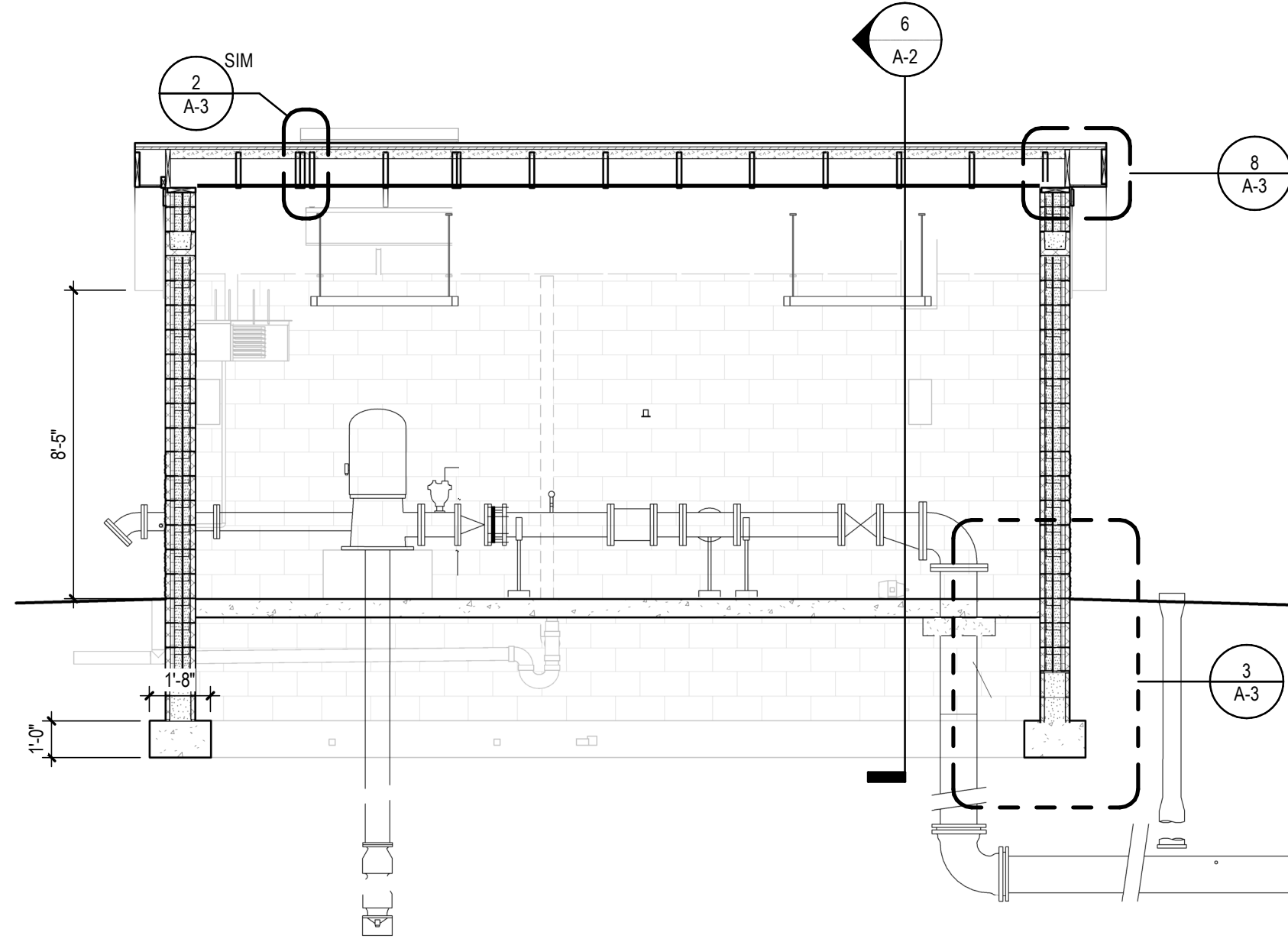
CITY OF OWOSSO  
PALMER 3A WELLHOUSE DESIGN  
WELLHOUSE PLANS AND GENERAL INFORMATION  
A-1

COPYRIGHT 2022 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM

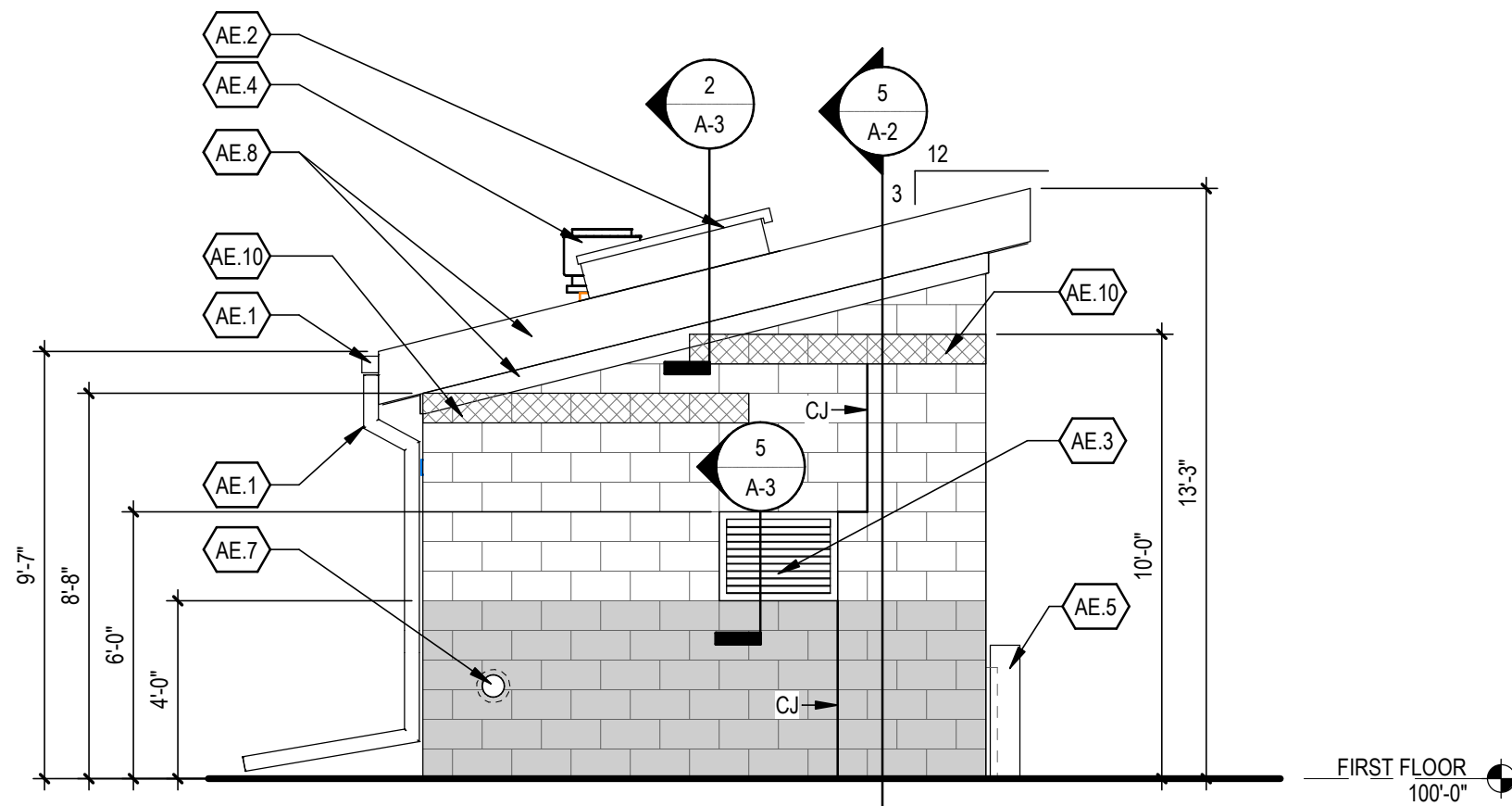




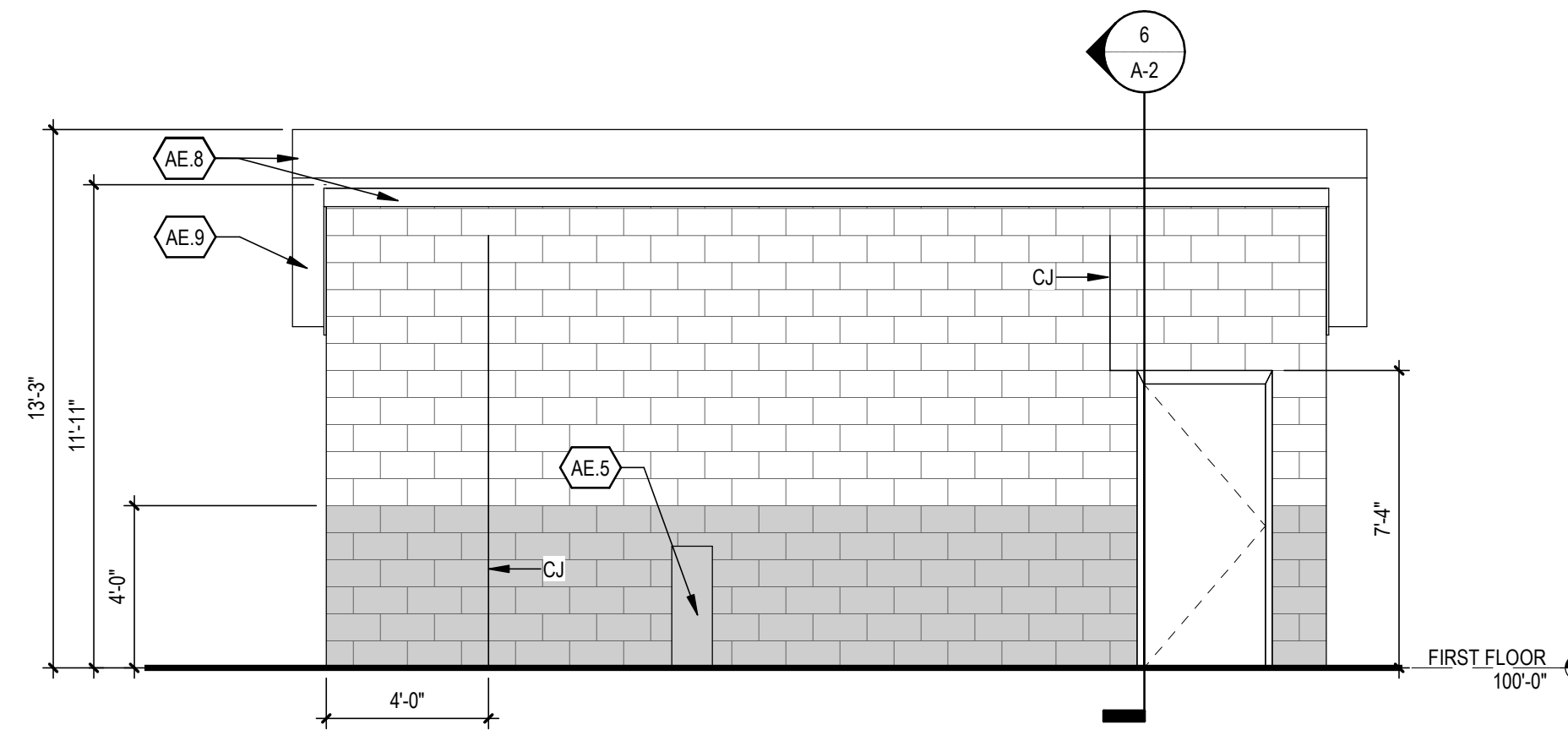
**6 BUILDING SECTION**  
1/4" = 1'-0"



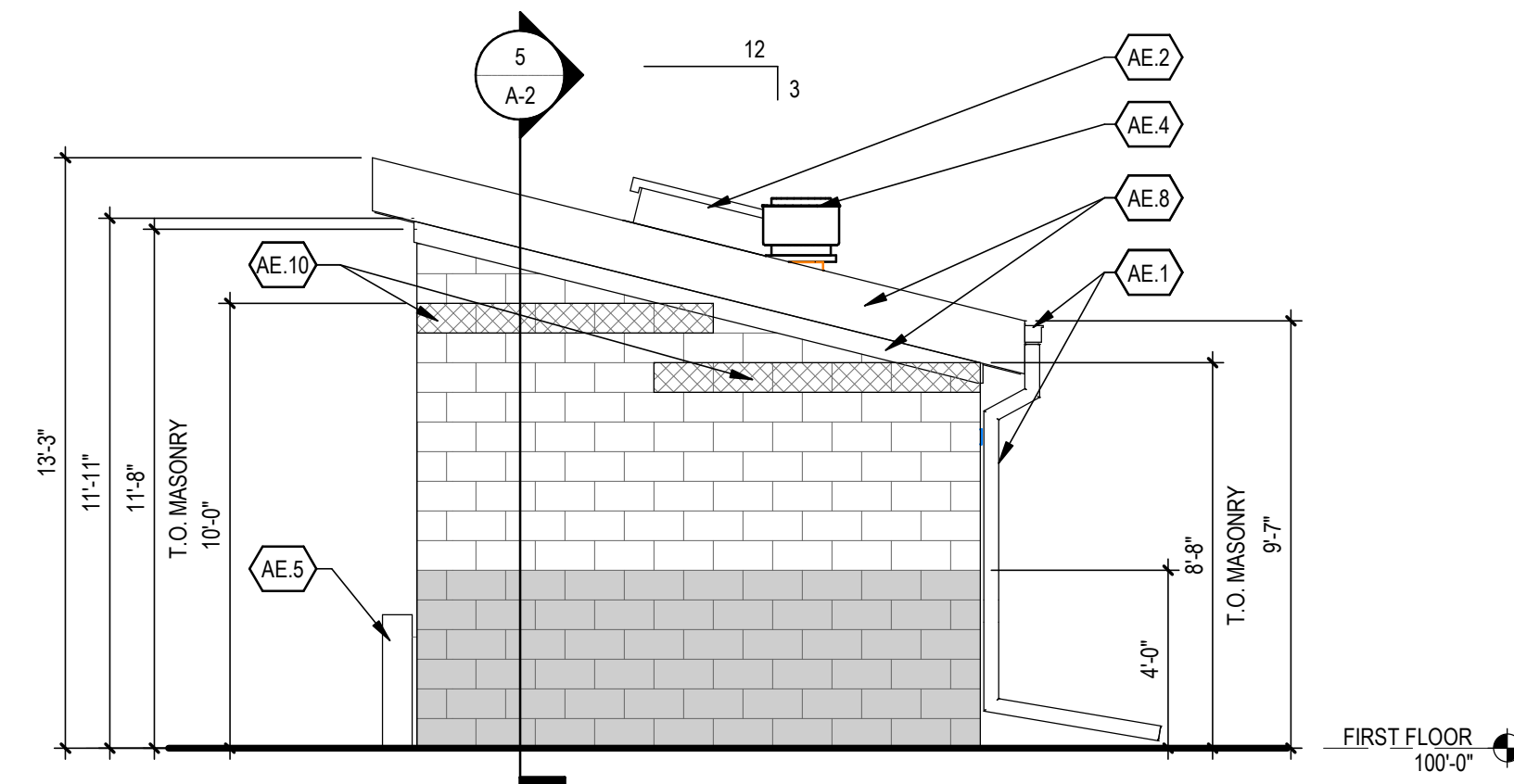
**5 BUILDING SECTION**  
1/4" = 1'-0"



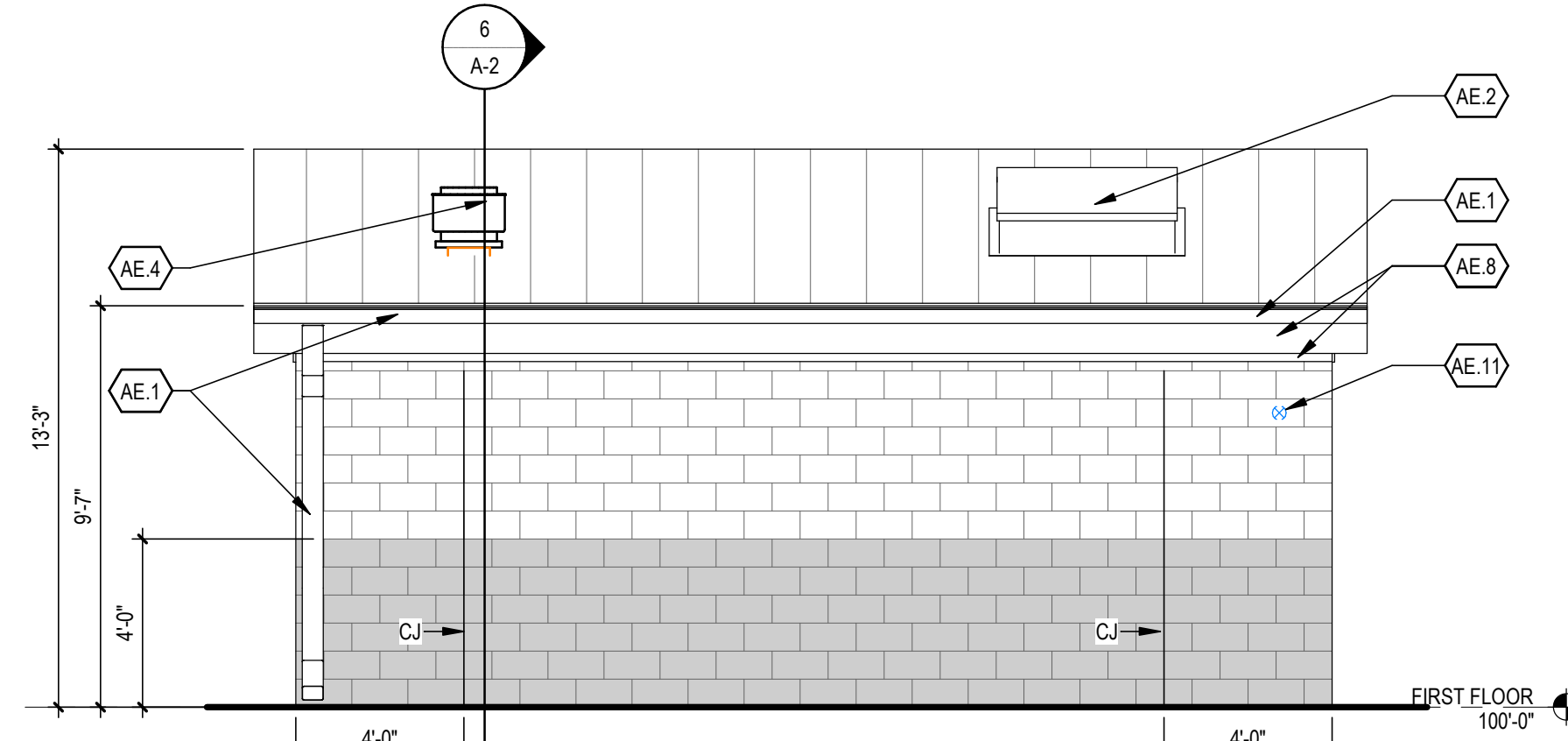
**4 WEST ELEVATION**  
1/4" = 1'-0"



**3 SOUTH ELEVATION**  
1/4" = 1'-0"



**2 EAST ELEVATION**  
1/4" = 1'-0"



**1 NORTH ELEVATION**  
1/4" = 1'-0"

**GENERAL NOTES - ELEVATIONS**

1. ALL PENETRATIONS SHALL BE SEALED WITH APPROPRIATE MATERIAL
2. ALL EXPOSED METAL ELEMENTS TO BE PRE-FINISHED; COLOR AS SELECTED BY ARCHITECT
3. REFER TO PROJECT MANUAL FOR ADDITIONAL INFORMATION ON FINISHES & INSTALLATION REQUIREMENTS

**SHEET KEYNOTES**

- | XX.## | DESCRIPTION   |
|-------|---|
| AE.1  | PRE-FINISHED ALUMINUM GUTTER AND DOWNSPOUT; PROVIDE SPLASHBLOCK                                       |
| AE.2  | 48"x48" EQUIPMENT HATCH   |
| AE.3  | LOUVER; REF: MECHANICAL   |
| AE.4  | EXHAUST FAN; REF: MECHANICAL  |
| AE.5  | GAS SERVICE; REF: MECH/PLUMBING   |
| AE.7  | PROCESS PIPING; REF: PROCESS PLANS AND ELEVATIONS   |
| AE.8  | PRE-FINISHED ALUMINUM WRAPPED WOOD FASCIA   |
| AE.9  | PRE-FINISHED ALUMINUM WRAPPED WOOD SOFFIT   |
| AE.10 | CROSSHATCHING INDICATES LOCATION OF BOND BEAM IN ANGLED WALL, GROUT WALL ABOVE SOLID; REF: STRUCTURAL |
| AE.11 | VENT; REF: MECHANICAL   |



ISSUE: 12/05/2022  
 REVISIONS:  
 10/28/2022 ISSUE FOR PA 309 CONSTRUCTION PERMIT  
 12/01/2022 ISSUED FOR BID

CITY OF OWOSSO  
 PALMER 3A WELLHOUSE DESIGN  
 WELLHOUSE ELEVATIONS AND SECTIONS


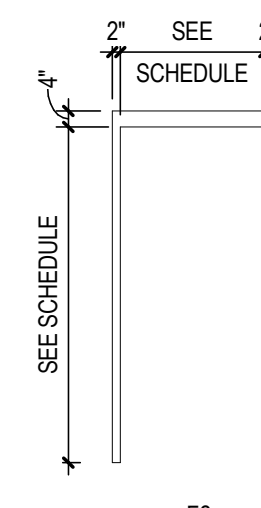
**FINISH SELECTION LEGEND**

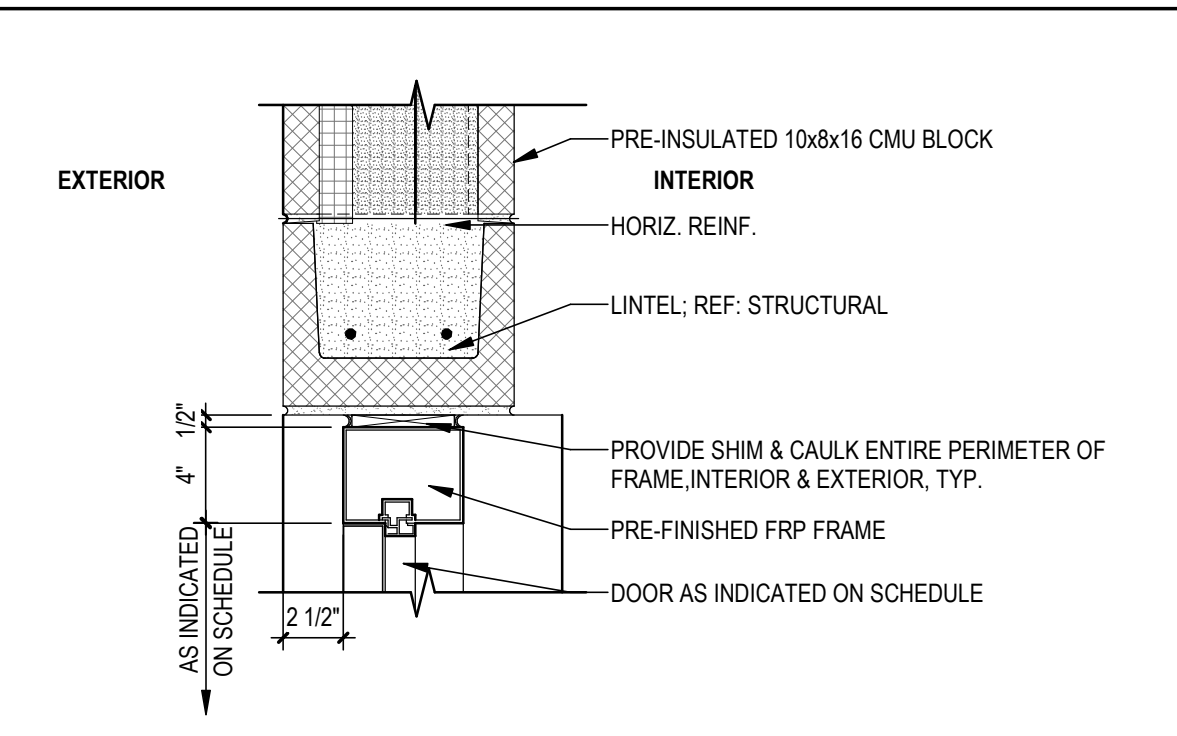
- STANDING SEAM METAL ROOF  
ATAS, 1-1/2" FIELD LOCK, 16" WIDTH, COLOR AS SELECTED BY ARCHITECT
- ALUMINUM WRAPPED SOFFITS AND FASCIAS  
COLOR AS SELECTED BY ARCHITECT
- SMOOTH FACE CMU  
CONCRETE PRODUCTS GROUP, 10"x8"x16" H-R INSULATED MASONRY UNITS, COLOR AS SELECTED BY ARCHITECT
- SPLIT FACE CMU  
CONCRETE PRODUCTS GROUP, 10"x8"x16" H-R INSULATED MASONRY UNITS, COLOR AS SELECTED BY ARCHITECT
- FIBERGLASS REINFORCED DOORS AND FRAMES  
SPECIAL-LITE AF-220 SANDSTONE TEXTURED, FLUSH PANEL, EPS CORE, COLOR AS SELECTED BY ARCHITECT  
SPECIAL-LITE AF-250, COLOR AS SELECTED BY ARCHITECT

DATE: 12/05/2022  
 PROJECT NUMBER: 0202-22-0070  
 COUNTY: SHAWANASSEE  
 SHEET: A-2

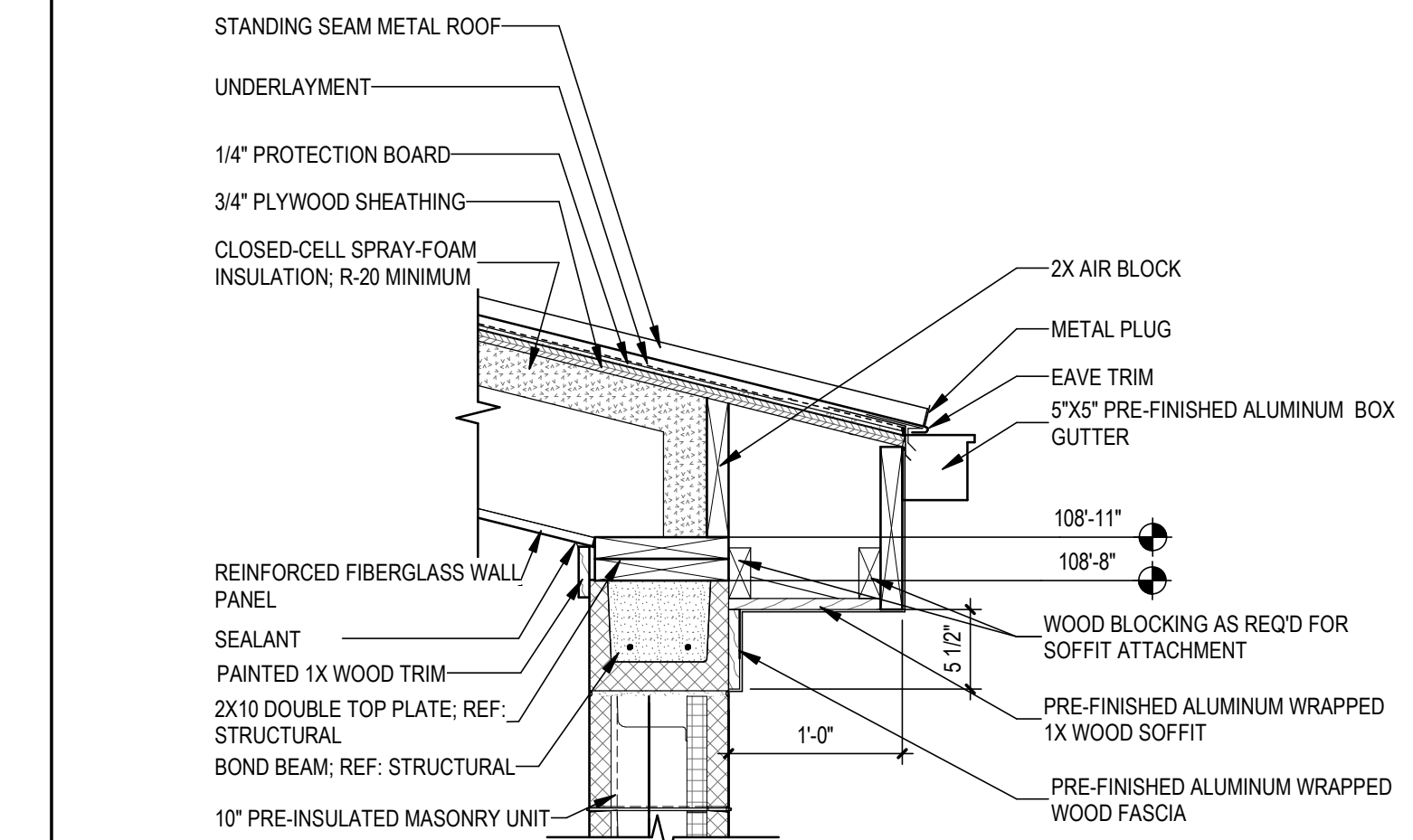
COPYRIGHT 2022 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM



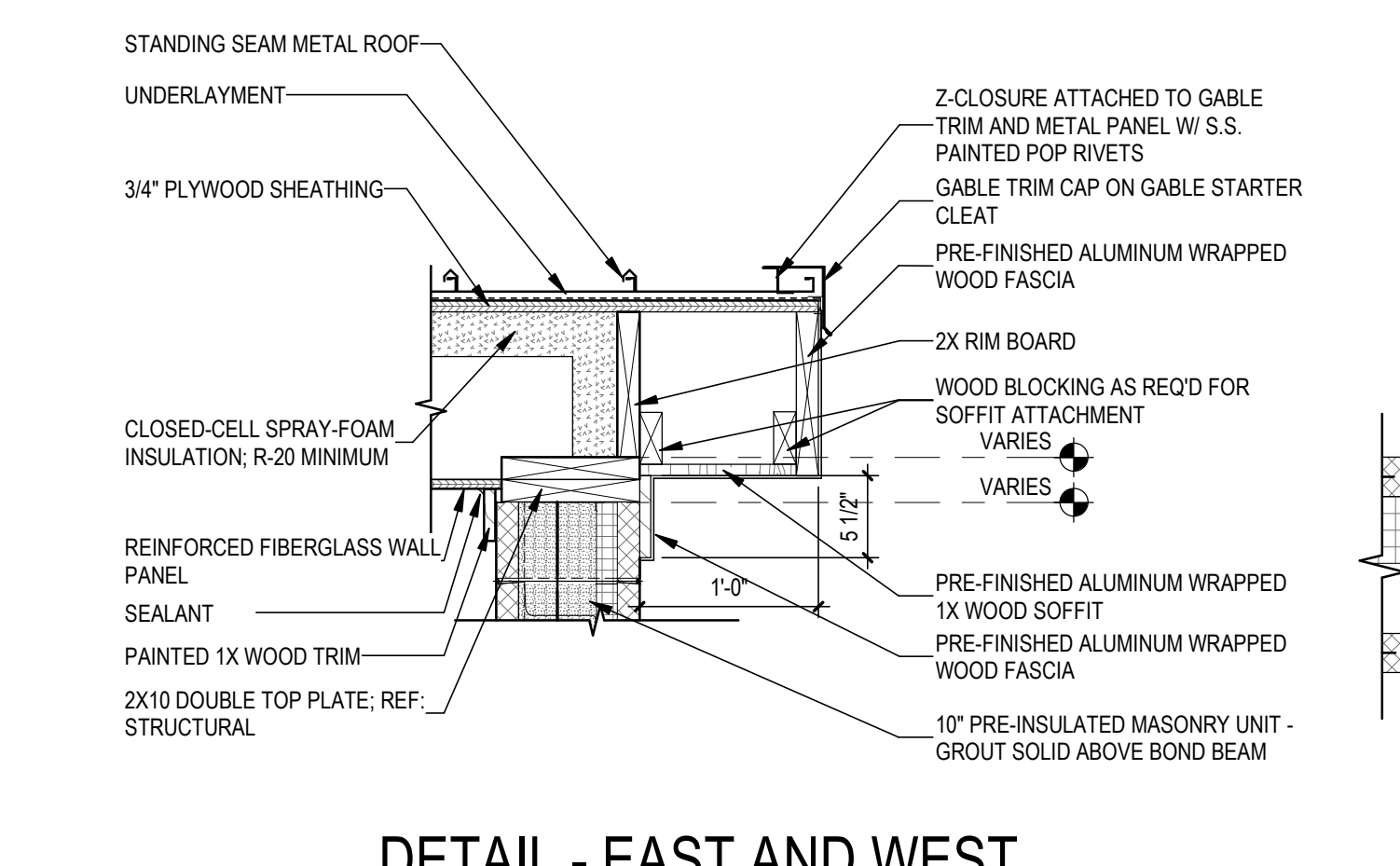
DOOR TYPES		DOOR FRAME TYPES		DOOR SCHEDULE																													
				<p><b>SCHEDULE KEY:</b></p> <table border="1"> <tr> <th>MARK:</th> <th>TYPE:</th> <th>DOOR MATERIAL:</th> <th>FRAME MATERIAL:</th> <th>DOOR / FRAME FINISH:</th> <th>GLAZING TYPE:</th> <th>DETAIL:</th> <th>FIRE RATING:</th> <th>HARDWARE SET:</th> </tr> <tr> <td>AS SPECIFIED ON FLOOR PLANS</td> <td>REFER TO LEGENDS ON THIS SHEET</td> <td>AL ALUMINUM CW CLAD WOOD EXST EXISTING TO REMAIN FG FIBERGLASS HM POLYVINYL CHLORIDE ST STEEL VL VINYL WD WOOD</td> <td>AL ALUMINUM CW CLAD WOOD EXST EXISTING TO REMAIN FG FIBERGLASS HM POLYVINYL CHLORIDE ST STEEL VL VINYL WD WOOD</td> <td>EXST EXISTING TO REMAIN PF PRE-FINISHED PTD PAINTED STN STAINED</td> <td>GL-1 SINGLE PANE, CLEAR GL-2 DOUBLE PANE, CLEAR GL-3 DOUBLE PANE, GRAY</td> <td>REFER TO DETAILS AS INDICATED</td> <td>IN MINUTES</td> <td>REFER TO PROJECT MANUAL DIVISION 08 FOR HARDWARE SCHEDULE</td> </tr> </table> <p><b>SCHEDULE NOTES:</b>                      1. EXISTING PANEL TO REMAIN                      2. EXISTING FRAME TO REMAIN                      3.</p>												MARK:	TYPE:	DOOR MATERIAL:	FRAME MATERIAL:	DOOR / FRAME FINISH:	GLAZING TYPE:	DETAIL:	FIRE RATING:	HARDWARE SET:	AS SPECIFIED ON FLOOR PLANS	REFER TO LEGENDS ON THIS SHEET	AL ALUMINUM CW CLAD WOOD EXST EXISTING TO REMAIN FG FIBERGLASS HM POLYVINYL CHLORIDE ST STEEL VL VINYL WD WOOD	AL ALUMINUM CW CLAD WOOD EXST EXISTING TO REMAIN FG FIBERGLASS HM POLYVINYL CHLORIDE ST STEEL VL VINYL WD WOOD	EXST EXISTING TO REMAIN PF PRE-FINISHED PTD PAINTED STN STAINED	GL-1 SINGLE PANE, CLEAR GL-2 DOUBLE PANE, CLEAR GL-3 DOUBLE PANE, GRAY	REFER TO DETAILS AS INDICATED	IN MINUTES	REFER TO PROJECT MANUAL DIVISION 08 FOR HARDWARE SCHEDULE
MARK:	TYPE:	DOOR MATERIAL:	FRAME MATERIAL:	DOOR / FRAME FINISH:	GLAZING TYPE:	DETAIL:	FIRE RATING:	HARDWARE SET:																									
AS SPECIFIED ON FLOOR PLANS	REFER TO LEGENDS ON THIS SHEET	AL ALUMINUM CW CLAD WOOD EXST EXISTING TO REMAIN FG FIBERGLASS HM POLYVINYL CHLORIDE ST STEEL VL VINYL WD WOOD	AL ALUMINUM CW CLAD WOOD EXST EXISTING TO REMAIN FG FIBERGLASS HM POLYVINYL CHLORIDE ST STEEL VL VINYL WD WOOD	EXST EXISTING TO REMAIN PF PRE-FINISHED PTD PAINTED STN STAINED	GL-1 SINGLE PANE, CLEAR GL-2 DOUBLE PANE, CLEAR GL-3 DOUBLE PANE, GRAY	REFER TO DETAILS AS INDICATED	IN MINUTES	REFER TO PROJECT MANUAL DIVISION 08 FOR HARDWARE SCHEDULE																									
REV	MARK	SIZE	NO. OF LEAFS	DOOR			FRAME			GLAZING	DETAIL			FIRE RATING		HDW	NOTES																
101		3'-0" x 7'-0" x 1 3/4"	1	F	FG	PF	F2	FG	PF	5 3/4"	10	7	6			1																	



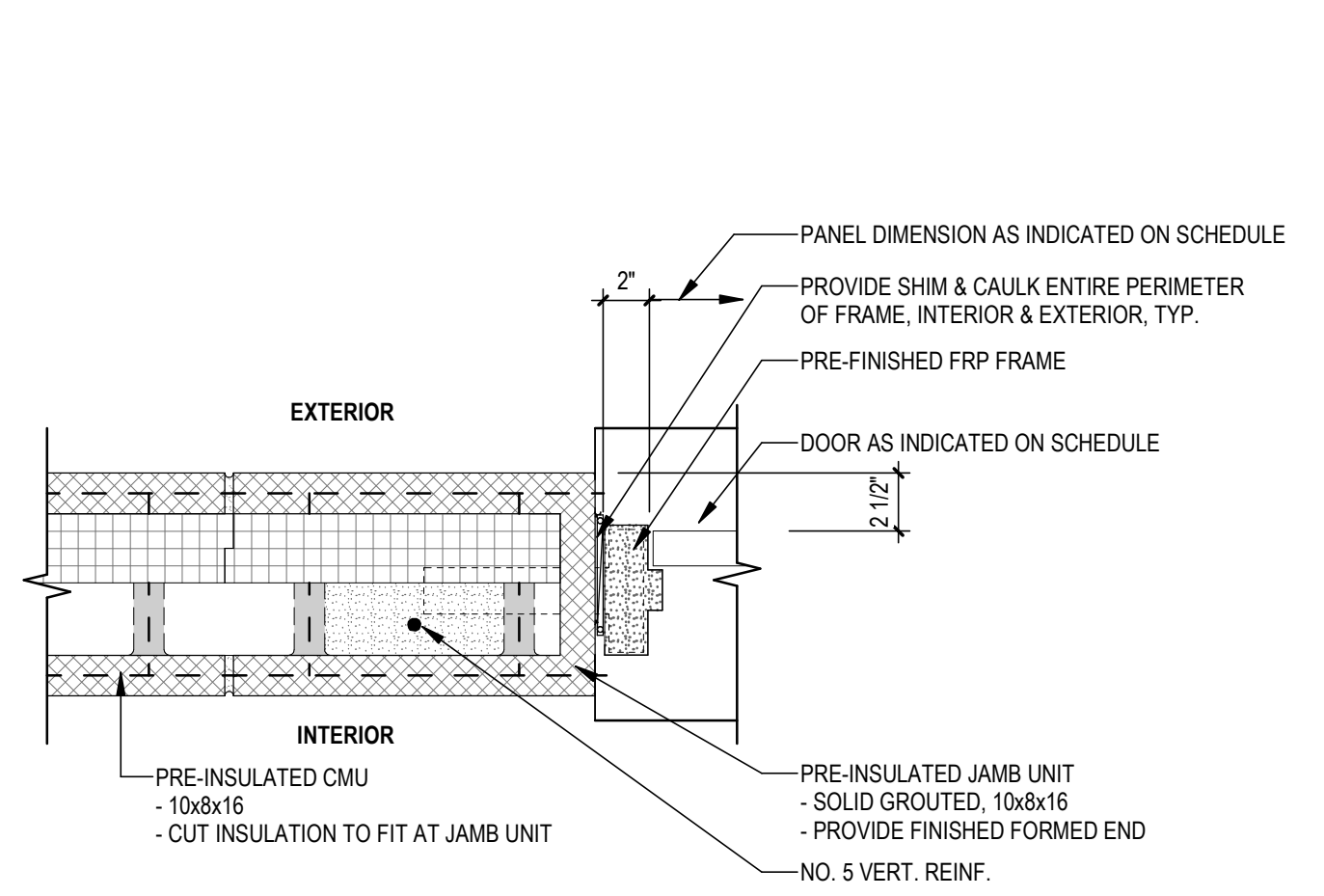
**10 F2 - HEAD**  
1 1/2" = 1'-0"



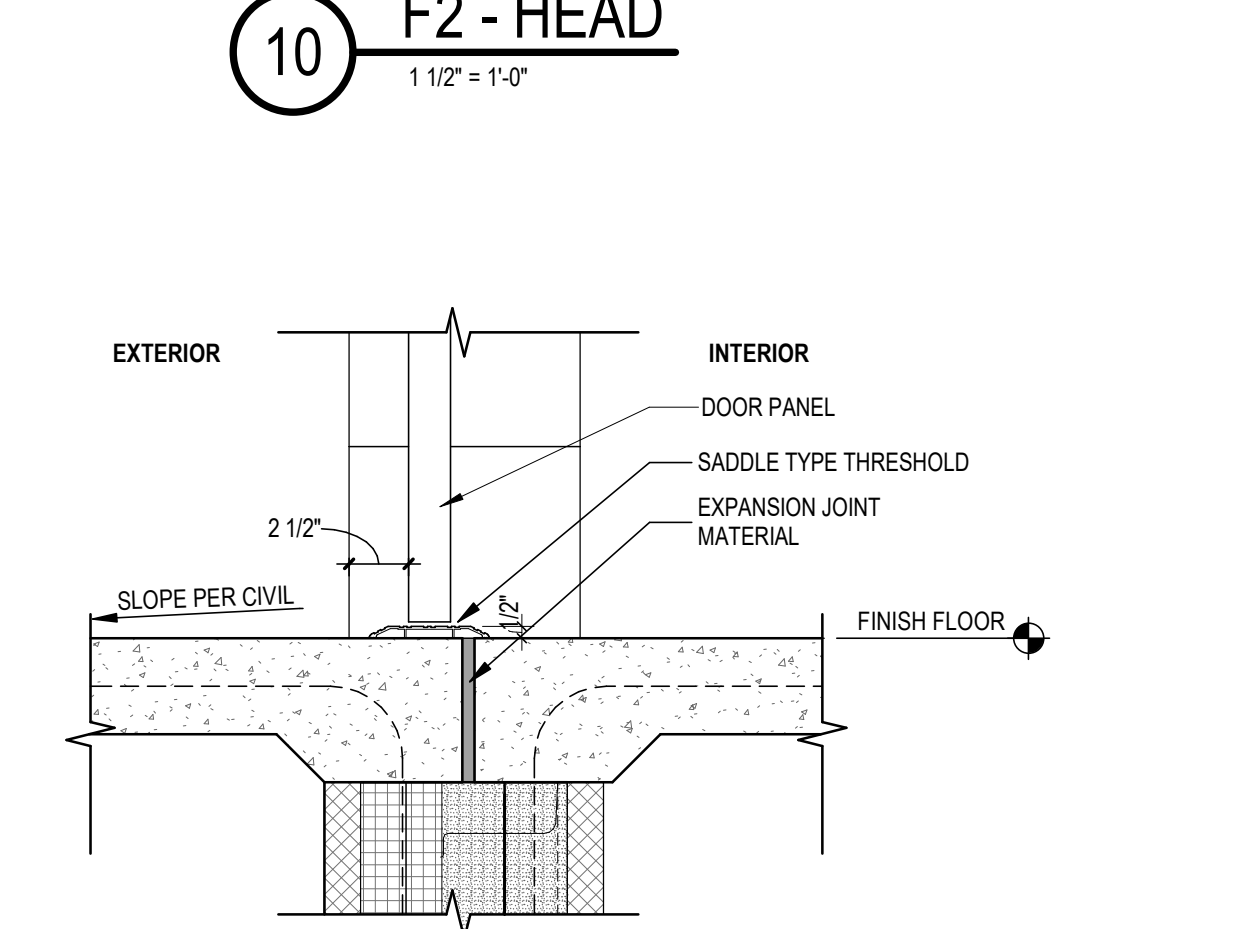
**9 DETAIL - NORTH ROOF OVERHANG**  
1" = 1'-0"



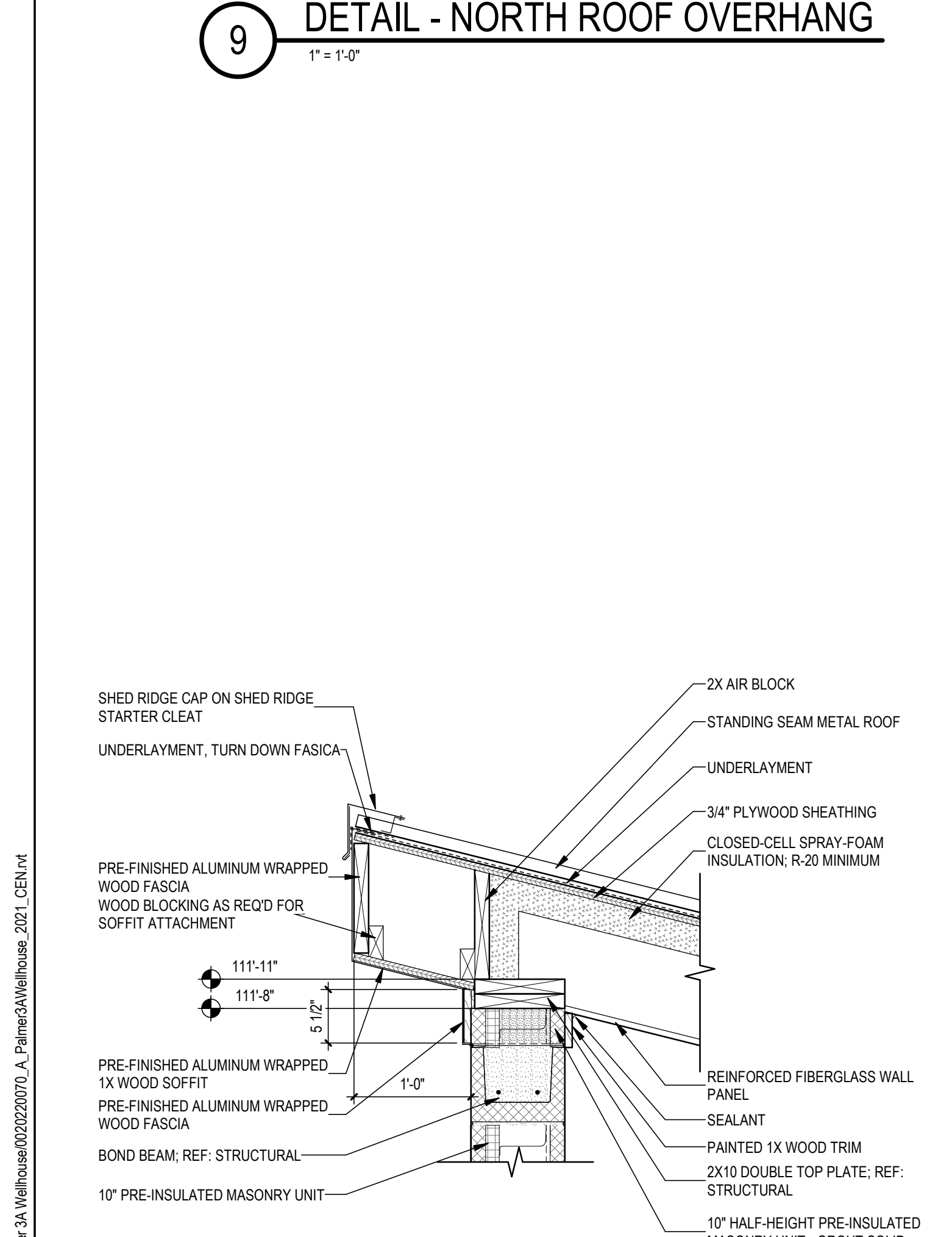
**8 DETAIL - EAST AND WEST ROOF OVERHANGS**  
1" = 1'-0"



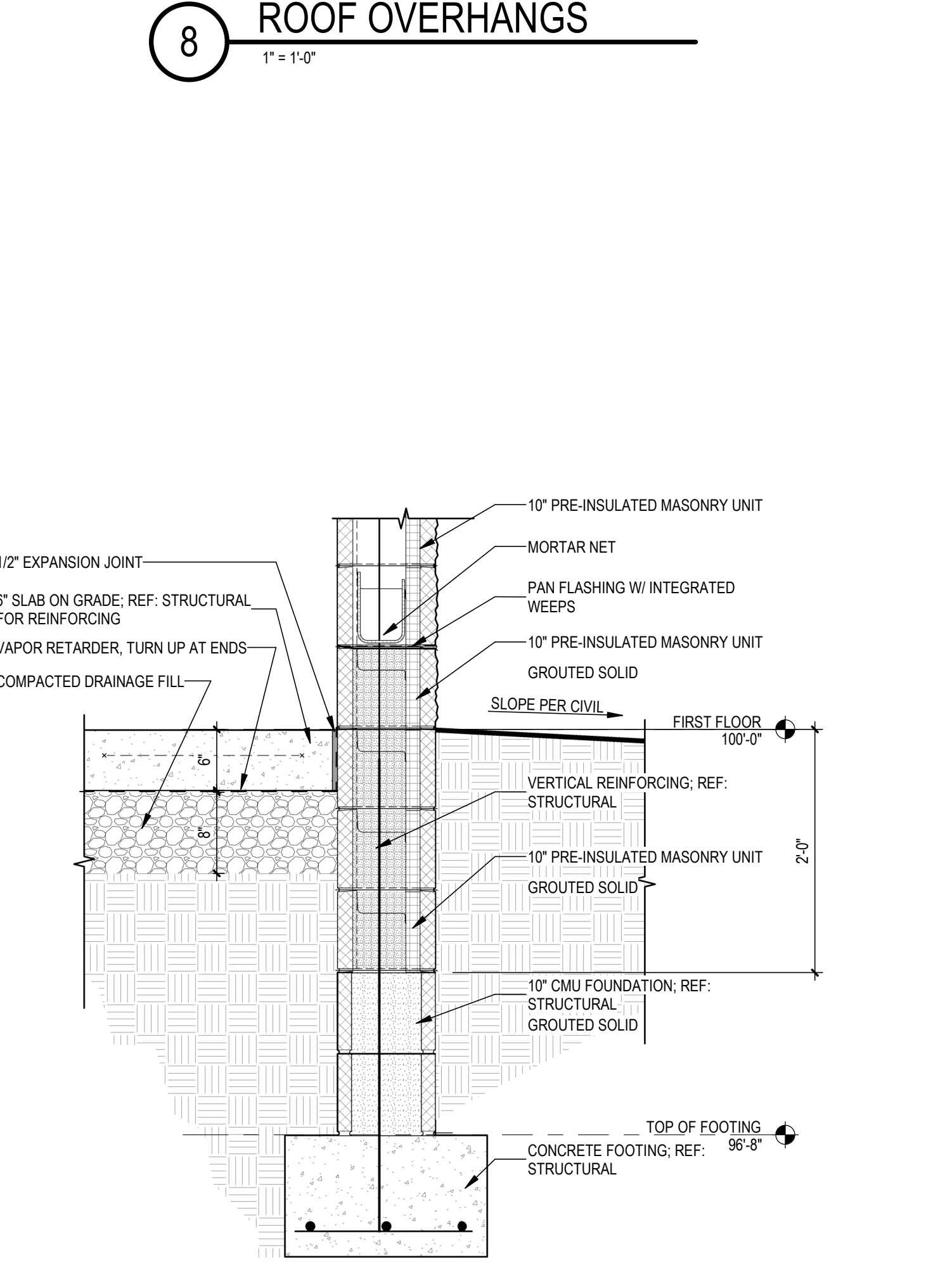
**7 F2 - JAMB**  
1 1/2" = 1'-0"



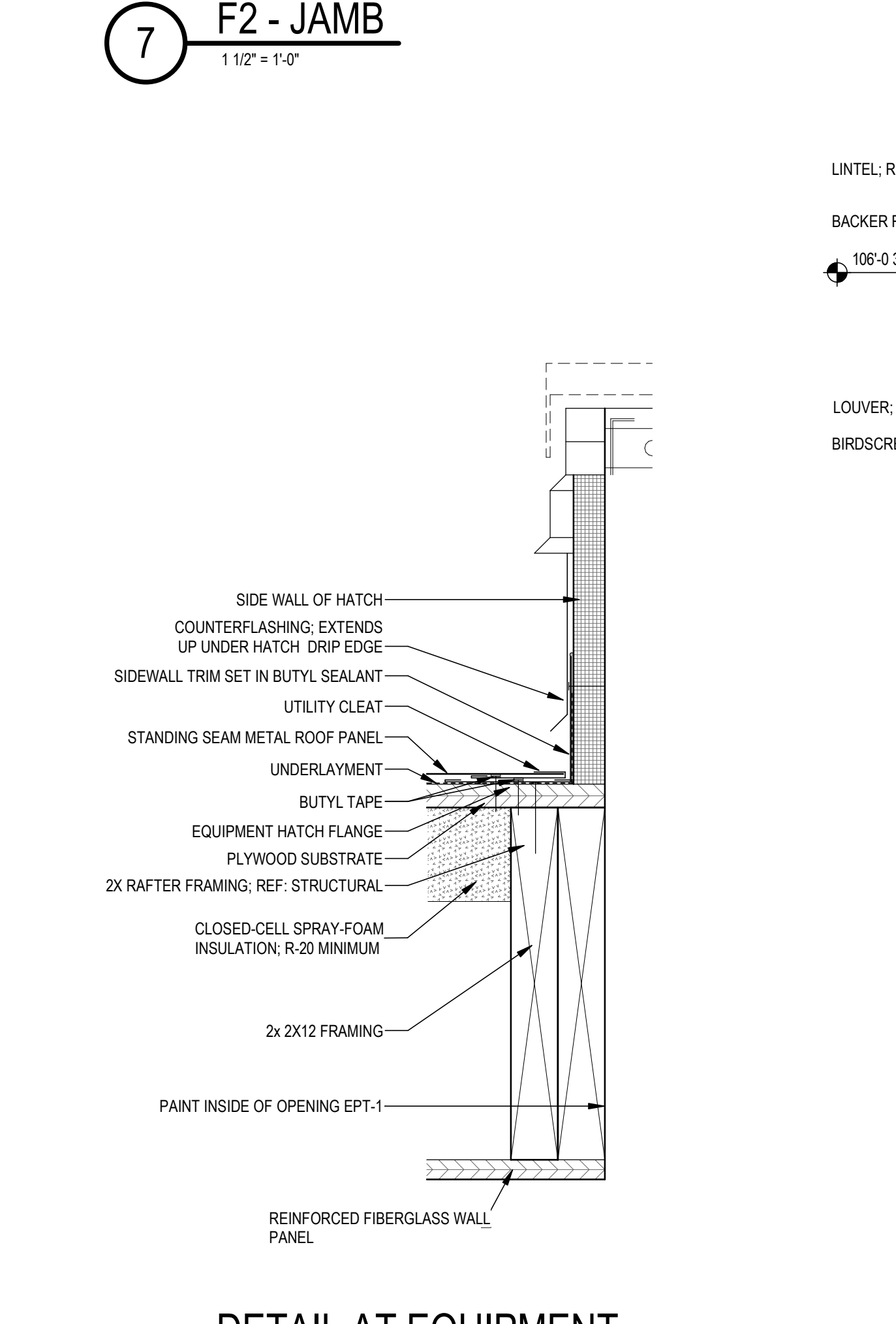
**6 F2 - THRESHOLD**  
1 1/2" = 1'-0"



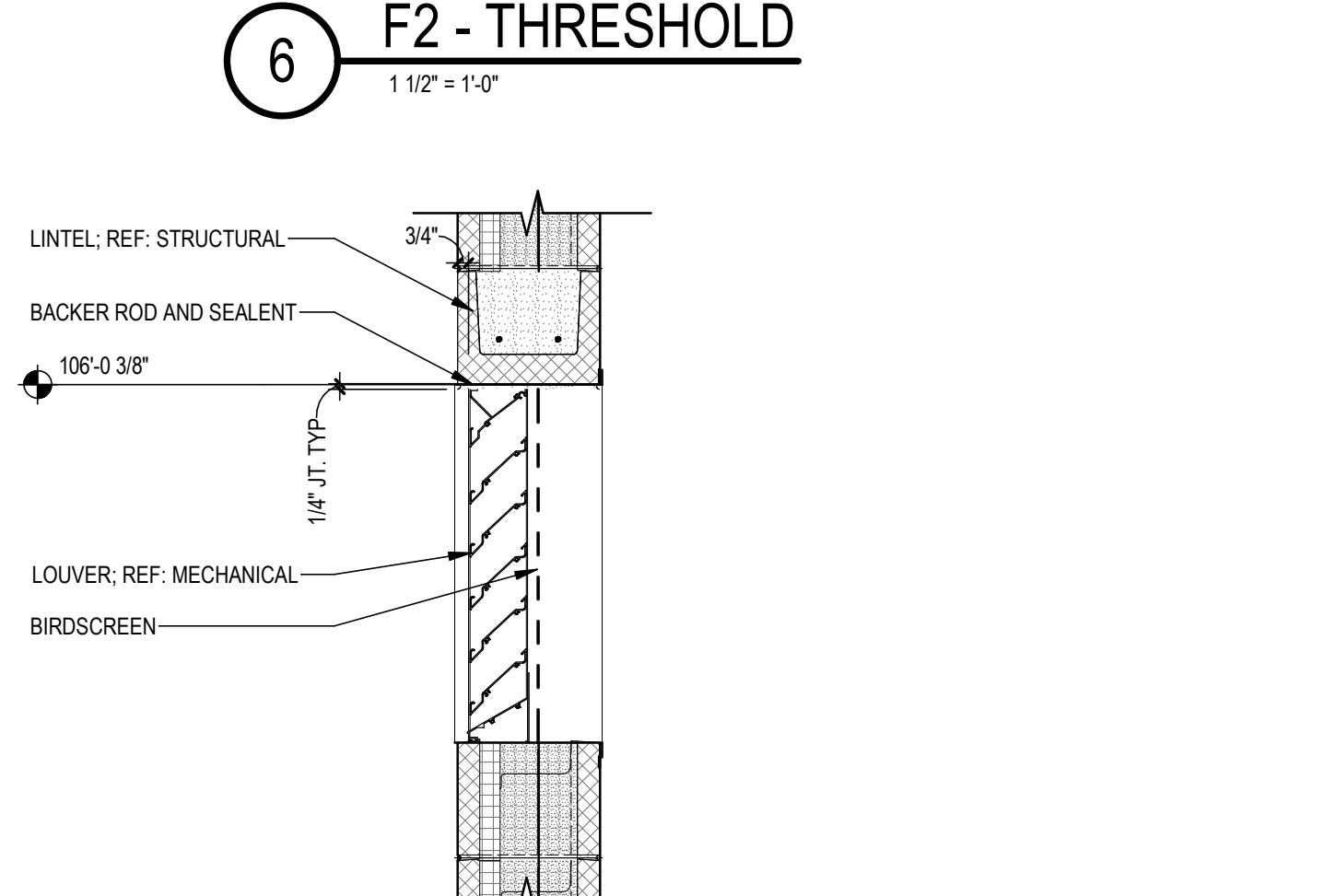
**4 DETAIL - SOUTH ROOF OVERHANG**  
1" = 1'-0"



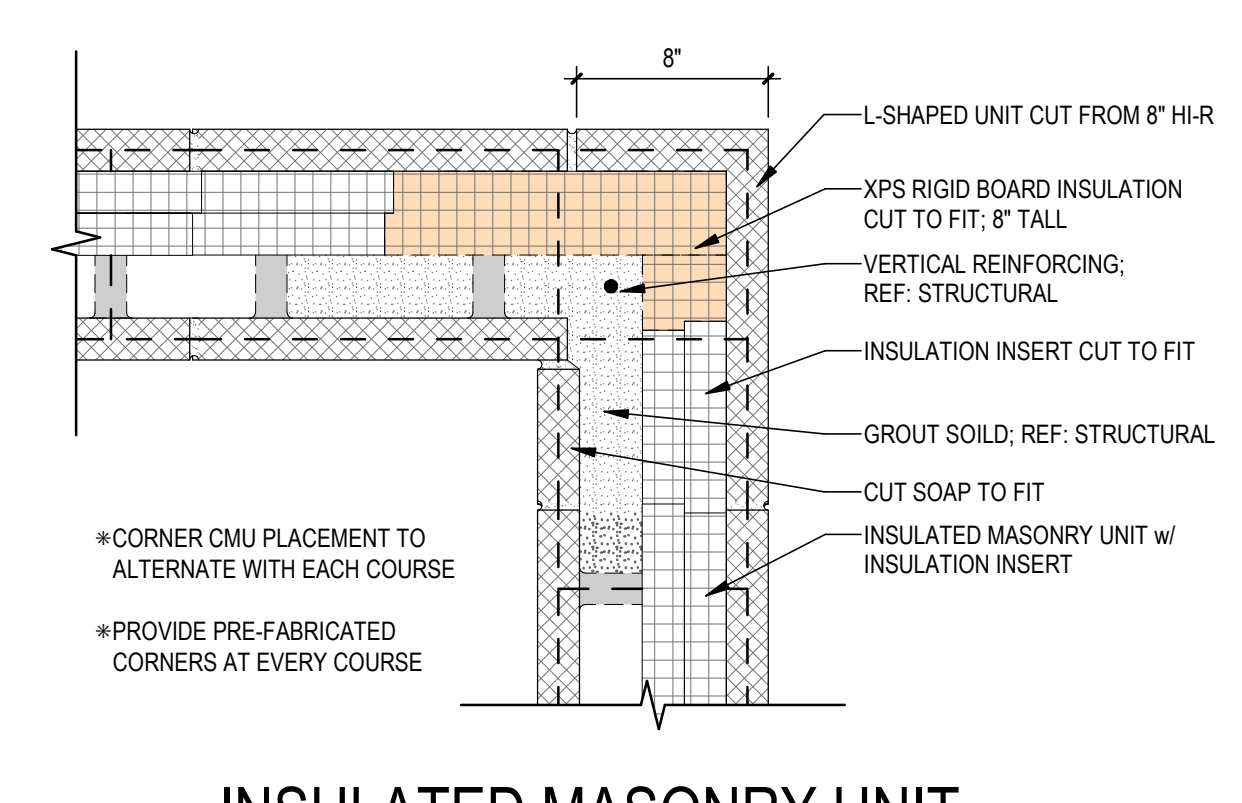
**3 DETAIL AT FOUNDATION WALL**  
1" = 1'-0"



**2 DETAIL AT EQUIPMENT HATCH CURB**  
3" = 1'-0"



**5 SECTION AT LOUVER**  
1" = 1'-0"



**1 INSULATED MASONRY UNIT CORNER DETAIL**  
1 1/2" = 1'-0"



OHM-ADVISORS.COM

12/05/2022  
 10/28/2022  
 12/01/2022

ISSUE: ISSUED FOR PERMIT  
 REVISIONS: ISSUE FOR PA 399 CONSTRUCTION PERMIT  
 ISSUED FOR BID

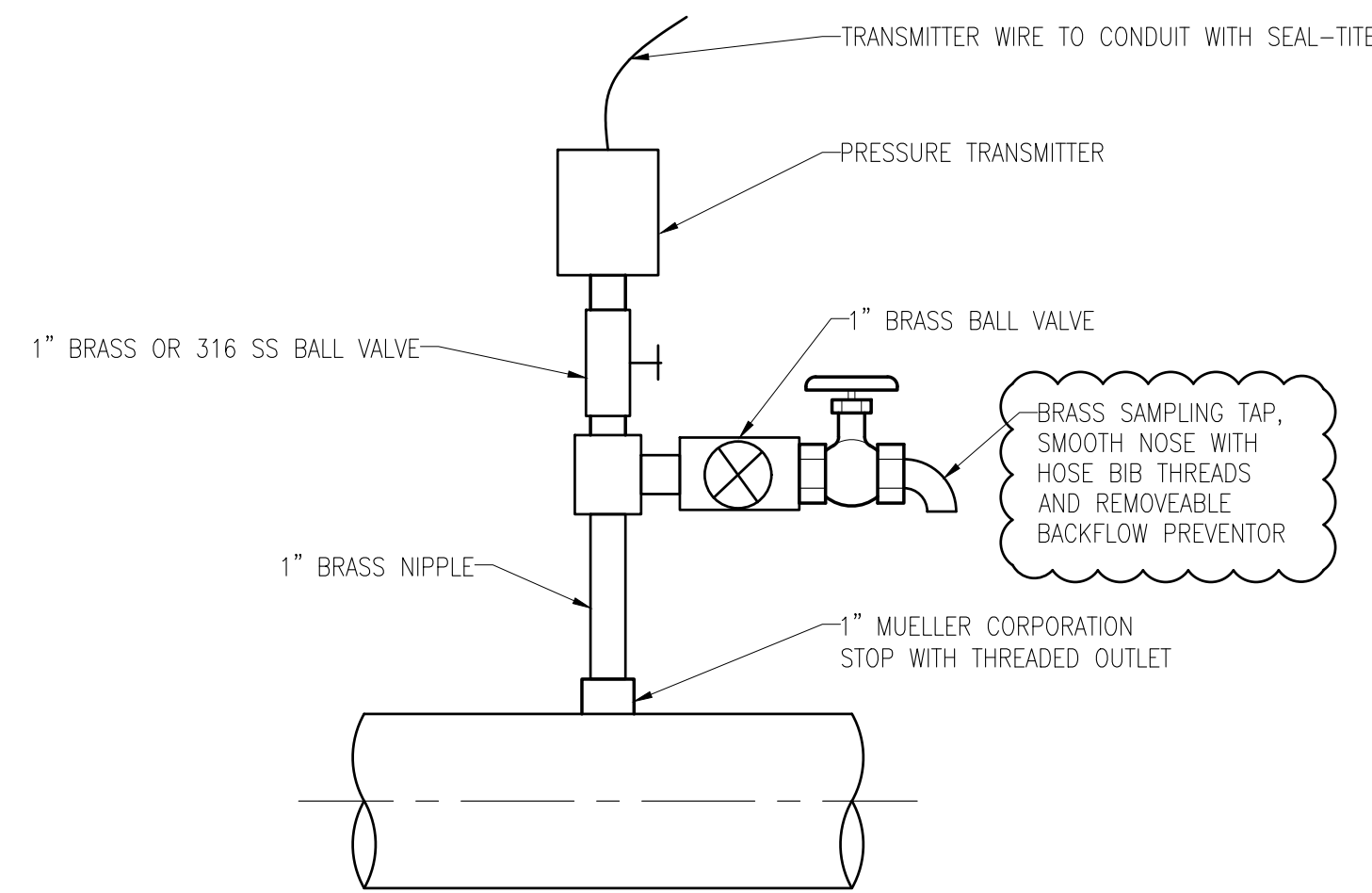
DATE: 12/06/2022  
 PROJ. MGR: COUNTY SHAWASSEE  
 PROJ. NO: 0203-22-0070

SHEET: CITY OF OWOSSO PALMER 3A WELLHOUSE DESIGN WELLHOUSE SCHEDULES AND DETAILS A-3



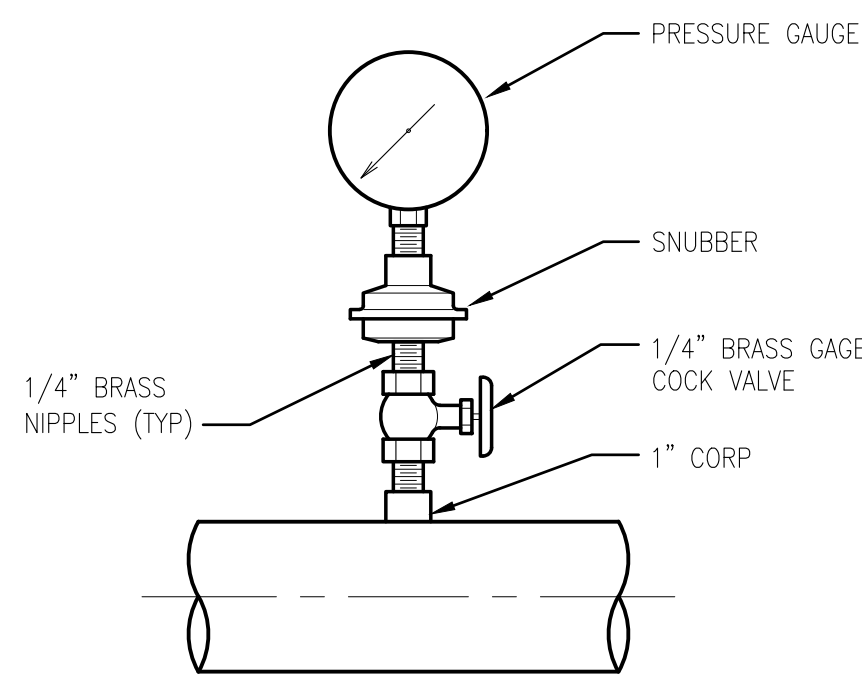
## GENERAL PROCESS NOTES

- PROCESS EQUIPMENT DIMENSIONS, LOCATIONS AND PIPING SYSTEM LAYOUTS ARE BASED ON EQUIPMENT SELECTED AND SPECIFIED AND BY THE DESIGN ENGINEER. IF THE CONTRACTOR PROPOSES TO FURNISH EQUIPMENT THAT REQUIRES AN ARRANGEMENT OR SPACE DIFFERING FROM THAT INDICATED ON THE DRAWINGS OR SPECIFIED, THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER FOR APPROVAL DETAILS ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND PLUMBING, INSTRUMENTATION, HVAC AND ELECTRICAL DRAWINGS AND EQUIPMENT LISTS SHOWING ALL NECESSARY CHANGES AND EMBODYING ALL FEATURES OF THE EQUIPMENT AND/OR PROCESS SYSTEM PROPOSED. THIS INFORMATION SHALL INCLUDE BUT NOT LIMITED TO PLANS, SECTIONS, DETAILS AND SCHEMATICS OF ALL APPURTENANCES REQUIRED.
- EXTERIOR PIPING IS SHOWN ON THE CIVIL DRAWINGS.
- DIELECTRIC COUPLINGS, FLANGES OR UNIONS SHALL BE INSTALLED AT ALL CONNECTIONS OF COPPER PIPE TO OTHER TYPES OF METALLIC PIPING.
- MECHANICAL PLANS AND SECTIONS DO NOT SHOW ALL VALVES, GAUGES, SWITCHES, OPERATORS, DRAWINGS, VENTS, ETC. REQUIRED FOR THE COMPLETE SYSTEM. CERTAIN SMALL DIAMETER PROCESS PIPING RUNS MAY NOT BE SHOWN IN THEIR ENTIRETY. GENERALLY, SMALL PIPING (3" DIAM. OR LESS) IS SHOWN DIAGRAMMATICALLY IN THE PROCESS SCHEMATICS. FIELD ROUTE TO AVOID INTERFERENCES, SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL FURNISH, INSTALL, AND TEST ALL PIPING SYSTEMS AS INDICATED ON THE PROCESS FLOW SCHEMATICS AND/OR AS DEFINED PROCESS PIPING SCHEDULES TO PROVIDE THE COMPLETE SYSTEM.
- ALL EQUIPMENT BASES AND PIPING HAVING DRAIN OUTLETS SHALL BE PIPED TO NEAREST OPEN END DRAIN OR TRENCH DRAIN USING GALVANIZED STEEL PIPE AND APPROPRIATE DIAMETER AS INDICATED ON THE DRAWINGS OR AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
- UNLESS OTHERWISE SHOWN, ALL PIPES UNDER CONCRETE SLABS SHALL BE ENCASED IN CONCRETE.
- NOT ALL VALVE AND GATE OPERATORS ARE SHOWN (I.E. HANDWHEELS, CRANKS, CHAINWHEELS, MOTORS, LEVERS). OPERATORS SHALL BE LOCATED TO ALLOW CONVENIENT OPENING AND CLOSING OF VALVE OR GATES. ORIENTATION OF OPERATORS SHALL BE BY THE APPROVAL OF THE ENGINEER. NO VALVES SHALL BE INSTALLED WITH THE OPERATING STEM IN THE VERTICAL DOWNWARD POSITION.
- PIPING SHALL BE INSTALLED SO THAT ANY PIPE, LAYER OF PIPING OR EQUIPMENT CAN BE REMOVED WITHOUT DISTURBING REMAINING PIPES AND SUPPORTS.
- THE NUMBER OF UNIONS OR OTHER TYPES OF DISMANTLING COUPLES SHOWN IS APPROXIMATE. THE CONTRACTOR SHALL PROVIDE UNIONS OR DISMANTLING COUPLINGS WHETHER THEY ARE SHOWN ON THE DRAWING OR NOT ON ALL PIPELINES WITH WELDED, THREADED OR SOLVENT CEMENTED JOINTS AT ALL EQUIPMENT CONDITIONS. AT A MINIMUM, EVERY 50 FEET AND IN BRANCH LINES TO ALLOW CONVENIENT REMOVAL OF PIPING, EQUIPMENT AND APPURTENANCES.
- INSTALL ALL PIPING SUPPORTS AND PIPING IN ACCORDANCE WITH THE LATEST EDITION OF THE ASME ANSI POWER PIPING CODE B 31.1.
- LOCATE PRESSURE TAPS ON THE TOP OF PROCESS PIPES.
- LOCATE SAMPLE TAPS ON THE SIDE OF PROCESS PIPES.
- UNLESS OTHERWISE NOTED, PIPE ELEVATIONS SHOWN ON PROCESS DRAWING REFER TO CENTERLINE OF THE PIPE.
- ALL GROUND BURIED PIPING TO HAVE A MINIMUM OF 60" OF EARTH COVER, UNLESS OTHERWISE DETAILED ON DRAWINGS. MAINTAIN MINIMUM CLEARANCE BETWEEN PIPES OF 6".
- INSTALL ALL PLUG, BUTTERFLY AND BALL VALVES WITH THE SHAFT IN THE HORIZONTAL POSITION, UNLESS OTHERWISE DIRECTED.
- ALL MATERIALS SHALL BE LEAD FREE AS DEFINED BY THE USEPA SAFE DRINKING WATER ACT, IN THAT, "ALL PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES THAT ARE USED FOR POTABLE WATER MUST COMPLY WITH THE LEAD FREE REQUIREMENT AND MUST BEAR THE MARK NSF/ANSI STANDARD 61, ANNEX G OR NSF 61-G.



### PRESSURE TRANSDUCER AND SAMPLE TAP

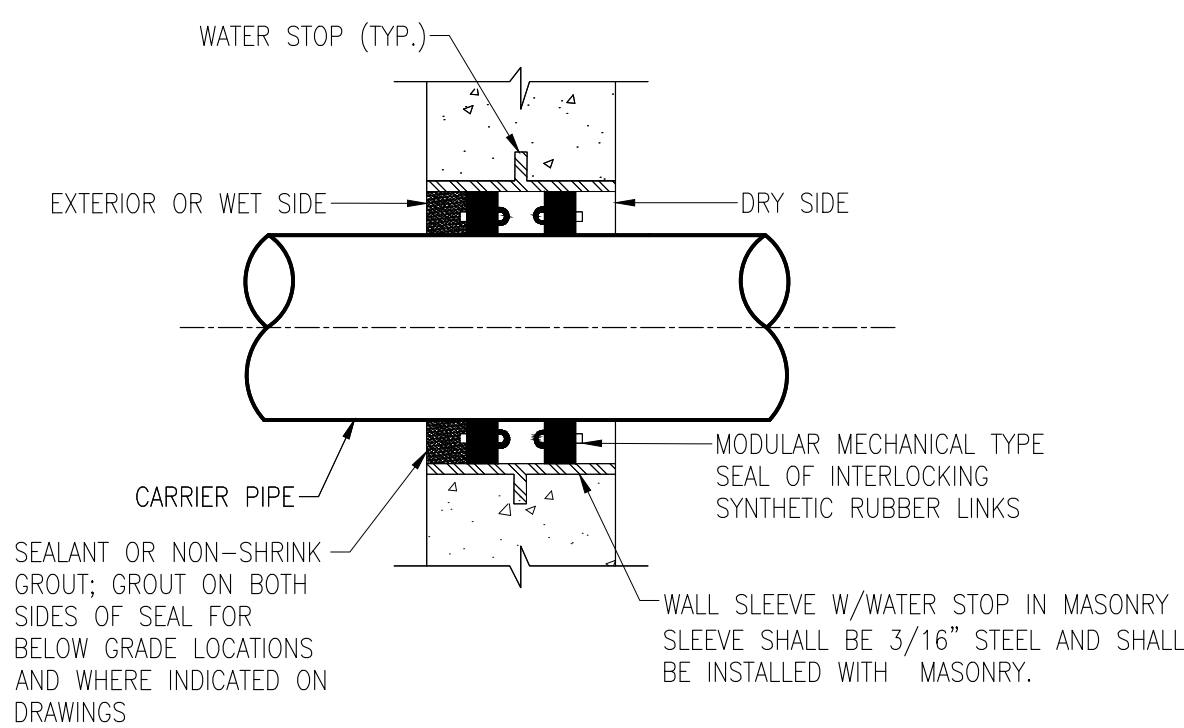
NO SCALE



### PRESSURE GAUGE TAP

NO SCALE

- PROVIDE SNUBBER FOR ALL INSTALLATIONS.
- LOCATE PRESSURE TAPS ON TOP OF PROCESS PIPING.
- FOR STEEL, VAL. STEEL, AND PVC 2.5" AND SMALLER USE A BUSHING IN A TEE.
- FOR DI AND FRP PIPE, ALL SIZES, USE PIPE SADDLE WITH BUSHING.
- FOR STEEL AND SS PIPES 3" AND LARGER, AND PRESSURE VESSELS, USE THRED-0-LET.

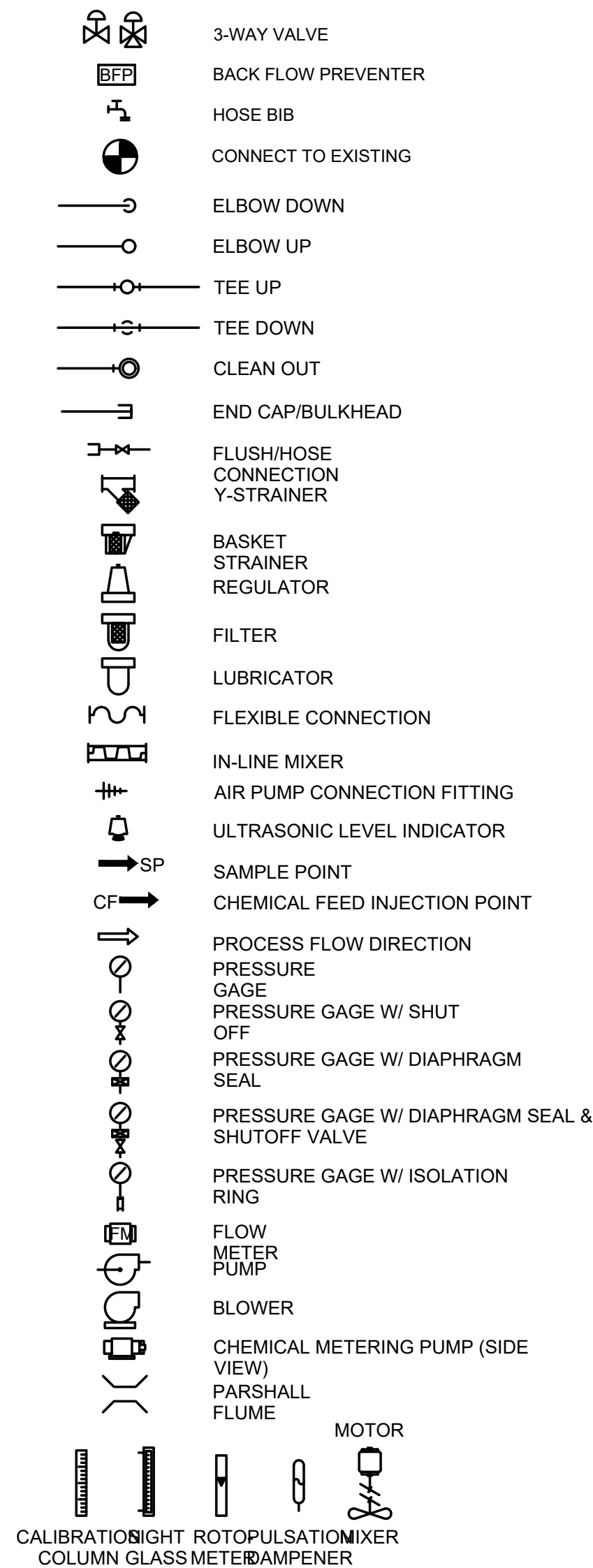


#### NOTES:

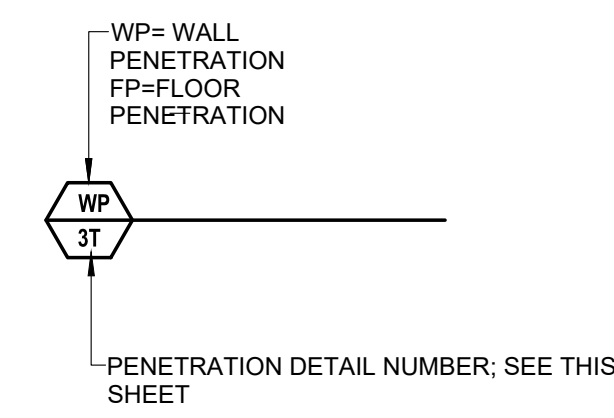
- CONCRETE SHALL BE WORKED IN AND VIBRATED TO ELIMINATE ALL VOIDS IN CONCRETE. IF VOIDS DO REMAIN, FILL WITH GROUT BEFORE INSTALLING PIPE AND SEALS.
- NUTS TO FACE DRY SIDE (INTERIOR) TO ALLOW FUTURE ADJUSTMENTS.
- PROVIDE ONE SEAL FOR WALLS LESS THAN 12" THICK AND TWO SEALS FOR WALLS 12" THICK AND GREATER.
- IF BOTH SIDES ARE WET, GROUT OR SEALANT IS NOT REQUIRED, UNLESS OTHERWISE NOTED.
- IF CONCRETE WALL IS EXISTING, THEN CORE DRILL WALL SMOOTH AND PROVIDE EPOXY BONDING AGENT AT CORE PERIMETER. CORE DRILL A 2" MIN. (TYP.) OFFSET FROM PIPE OD. WALL SLEEVE NOT REQUIRED UNLESS OTHERWISE NOTED.

WP-1 WALL PENETRATION - MECHANICAL SEAL  
NO SCALE

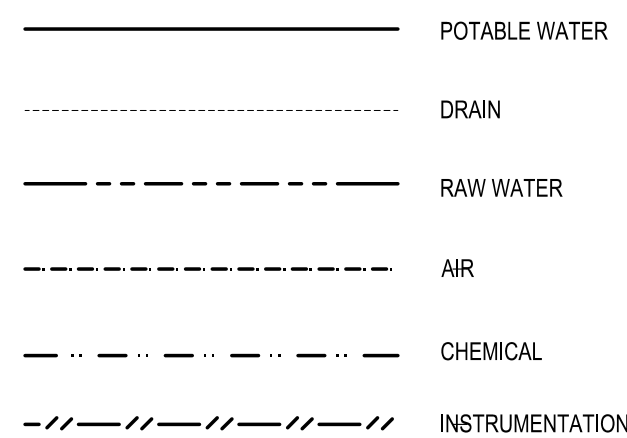
## MISCELLANEOUS SYMBOLS



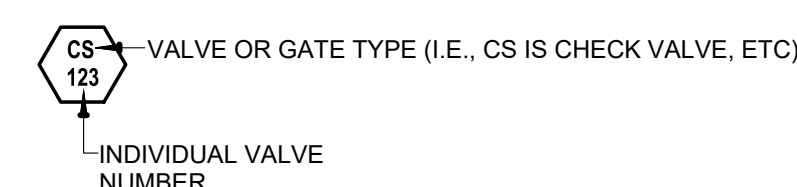
## PIPE PENETRATION TAG



## PIPE SERVICE TYPE (SCHEMATIC ONLY)



## VALVE AND GATE TAG



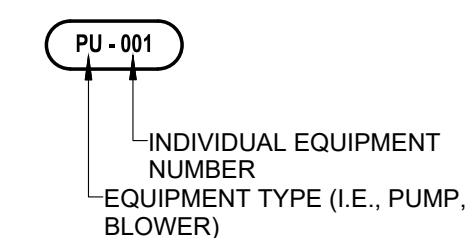
## VALVE DESIGNATIONS

SYMBOL	MARK	VALVE TYPE	
		PIPEWORK DRAWINGS	FLOW DIAGRAMS
[Symbol]	GA	GATE VALVE	
[Symbol]	CS	STANDARD CHECK VALVE	
[Symbol]	CC	CUSHION CHECK VALVE	
[Symbol]	SC	SILENT CHECK VALVE	
[Symbol]	RC	RADIAL CHECK VALVE	
[Symbol]	DC	DOUBLE VANE CHECK VALVE	
[Symbol]	B	BUTTERFLY VALVE	
[Symbol]	WB	BUTTERFLY VALVE (WAFER)	
[Symbol]	PV	PLUG VALVE	
[Symbol]	K	GATE VALVE - KNIFE	
[Symbol]	BV	BALL VALVE	
[Symbol]	BCV	BALL CONTROL VALVE	
[Symbol]	RP	RUBBER PINCH VALVE	
[Symbol]	CV	CONE VALVE	
[Symbol]	PRV	PRESSURE CONTROL & REGULATING VALVE	
[Symbol]	SV	SURGE OR PRESSURE RELIEF VALVE	
[Symbol]	AV	ALTITUDE VALVE	
[Symbol]	PD	PLUG DRAIN OR MUD VALVE	
[Symbol]	BW	BACKWATER (FLAP) VALVE	
[Symbol]	FTV	FOOT VALVE	
[Symbol]	TSV	TELESCOPIC VALVE	
[Symbol]	TPSV	TAPPING SLEEVE & VALVE	
[Symbol]	PRW	PRESSURE RELIEF VALVE (WALL TYPE)	
[Symbol]	PRS	PRESSURE RELIEF VALVE (SLAB TYPE)	
[Symbol]	FV	FLAP VALVE	

## PIPE JOINT DESIGNATIONS

DOUBLE LINE PIPING	SINGLE LINE PIPING	TYPE
[Symbol]	[Symbol]	FLANGED JOINT
[Symbol]	[Symbol]	MECHANICAL JOINT
[Symbol]	[Symbol]	GROOVED FLANGE ADAPTER
[Symbol]	[Symbol]	GROOVED PIPE COUPLING
[Symbol]	[Symbol]	BOLTED FLEXIBLE COUPLING
[Symbol]	[Symbol]	FCA=FLANGED COUPLING ADAPTER RFC=RESTRAINED FLANGED COUPLING ADAPTER
[Symbol]	[Symbol]	MFA
[Symbol]	[Symbol]	MEGAFLANGE ADAPTER
[Symbol]	[Symbol]	FLANGE ADAPTER
[Symbol]	[Symbol]	FLANGED EXPANSION JOINT
[Symbol]	[Symbol]	UNION
[Symbol]	[Symbol]	CONCENTRIC REDUCER
[Symbol]	[Symbol]	ECCENTRIC REDUCER - FLUSH TOP
[Symbol]	[Symbol]	ECCENTRIC REDUCER - FLUSH BOTTOM
[Symbol]	[Symbol]	QUICK DISCONNECT COUPLING

## EQUIPMENT TAG

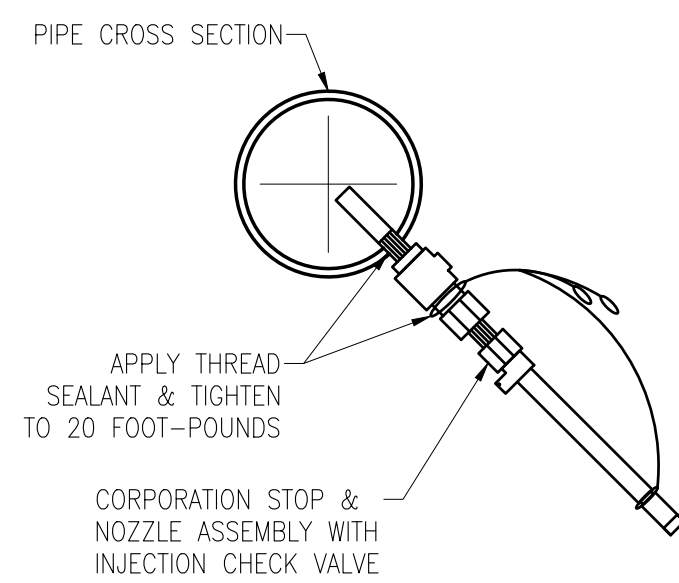


## PROCESS PIPE & FITTINGS SYMBOL NOTES

- GENERIC JOINT SYMBOL IS USED FOR ALL SINGLE LINE PIPING SHOWN ON THE INTERIOR AND EXTERIOR PIPING DRAWINGS.
- BOTH DETAILED AND SIMPLIFIED FLANGE REPRESENTATION SYMBOLS MAY BE SHOWN ON THE DRAWINGS.
- UNLESS MODIFIED BY THE GENERAL PROJECT NOTES OR DETAILED ON THE LAYOUT AND SCHEMATIC DRAWINGS, PIPE AND FITTING JOINT REQUIREMENTS FOR THE VARIOUS PIPE MATERIALS ARE DEFINED IN THE SPECIFICATIONS AND ARE INDICATED ON THE PROCESS PIPE SCHEDULES.
- WHERE DISSIMILAR METALS MAY COME IN CONTACT, CONTRACTOR SHALL PROVIDE ISOLATION FITTING, GASKETS, OR OTHER SUITABLE ISOLATION.

## PIPE PENETRATION NOTES

- PIPE PENETRATIONS ARE SHOWN IN TRUE SECTIONS FOR ILLUSTRATION PURPOSES ONLY.
- WALL PENETRATIONS SHALL BE LOCATED WITHIN A RISER SECTION AND NOT A WALL JOINT.

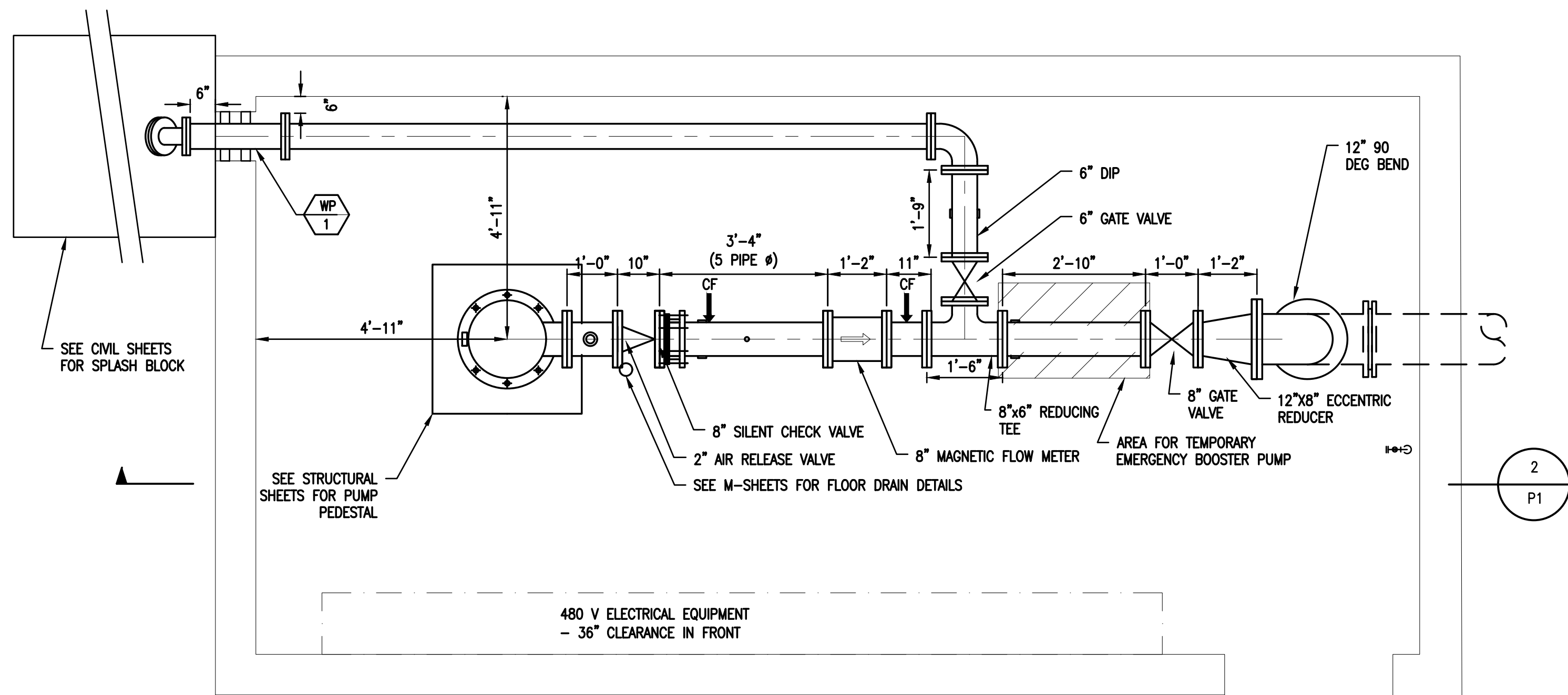


#### NOTES:

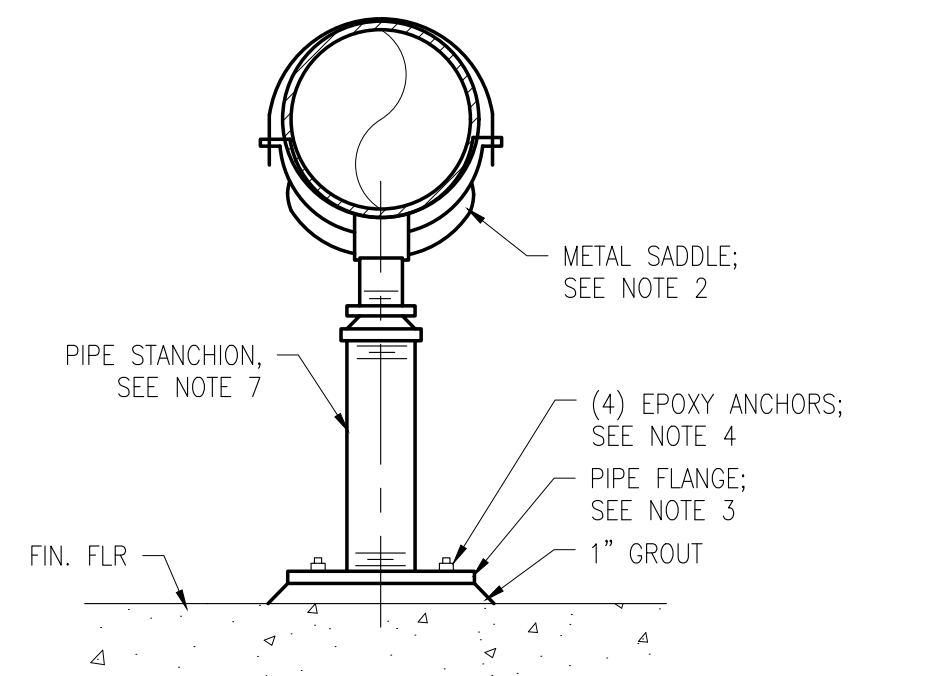
- QUILL SHALL BE INSTALLED AT THE 4:00 OR 8:00 POSITION ON THE PIPE
- PROVIDE LMI # 49287 3/4" NPT - CPVC NOZZLE WITH BRASS CORPORATION STOP OR APPROVED EQUAL.

## CHEMICAL FEED INJECTION CORPORATION STOP & NOZZLE ASSEMBLY

NO SCALE

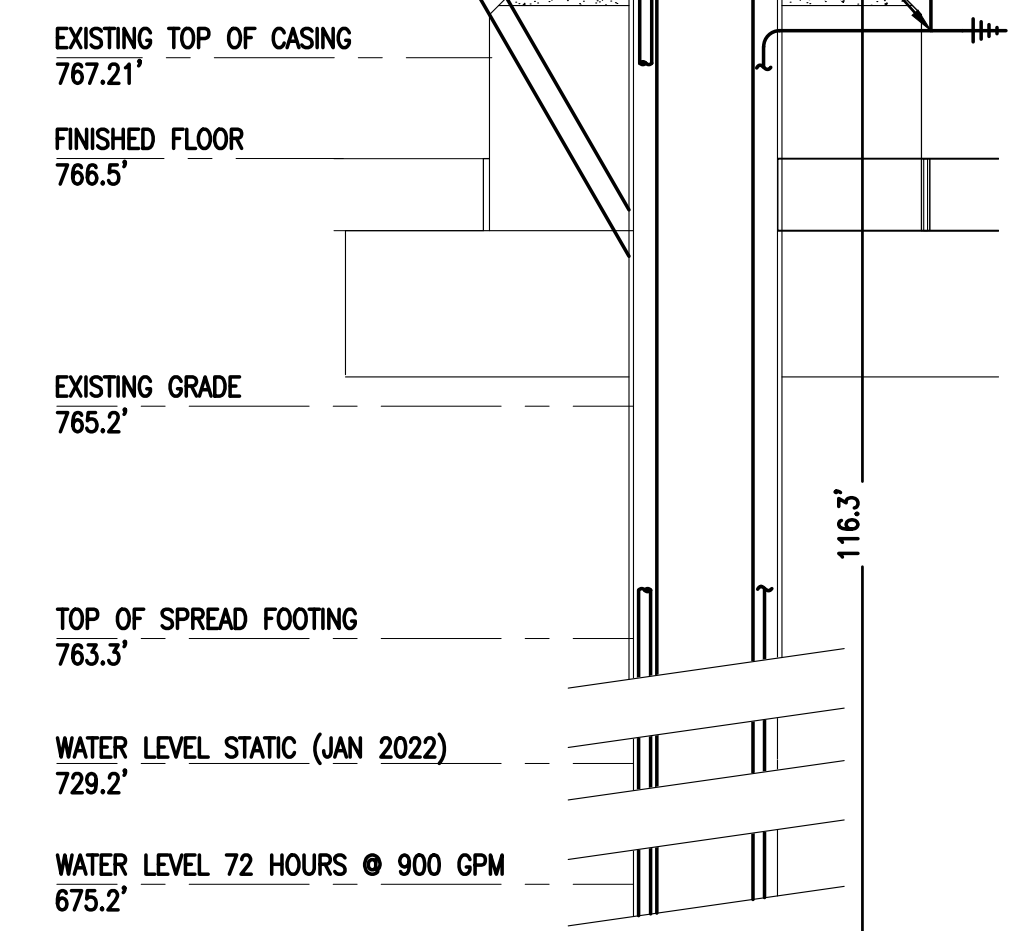
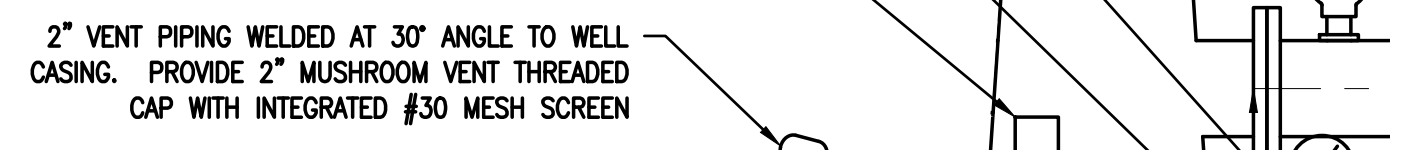
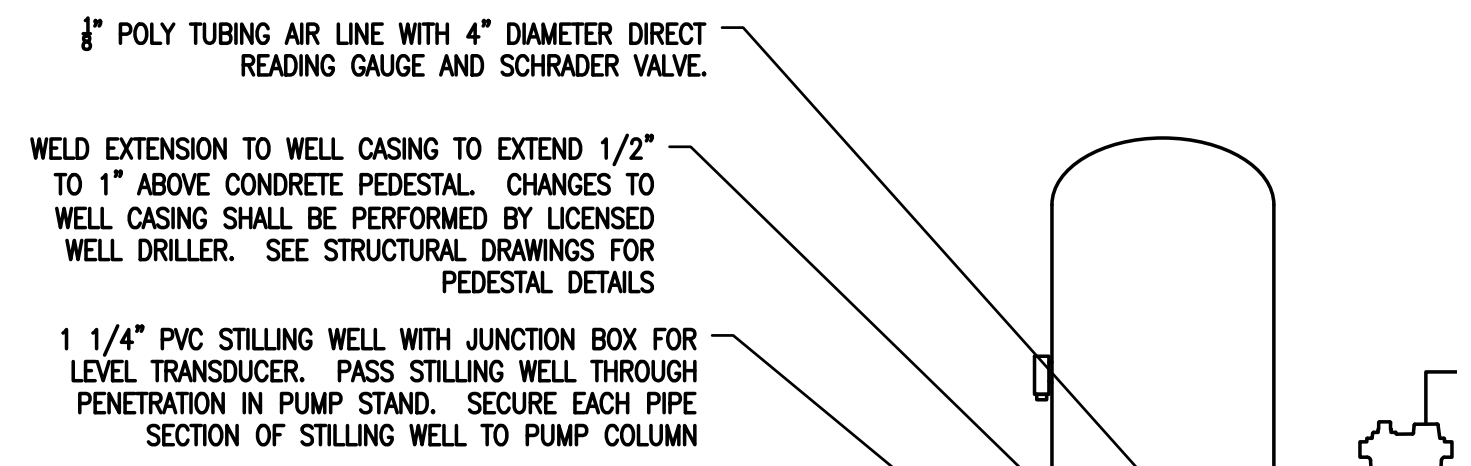


**1 PROCESS PLAN VIEW - PROPOSED WELL HOUSE**  
 1/2" = 1'-0"



- NOTES:**
- FOR PIPE DIAMETERS 4" TO 12"
  - METAL SADDLE SHALL BE GRINNELL FIGURE 259 OR EQUAL.
  - PIPE FLANGE SHALL BE CLASS 150 STEEL SLIP-ON FLANGE, FLAT FACED. SIZED TO MATCH STANCHION PIPE.
  - ANCHORS SHALL BE EMBEDDED MIN. OF 4". SIZE ANCHOR PER PIPE SUPPORT DIAMETER AND SADDLE MANUFACTURER RECOMMENDATIONS. MAX SPACING BETWEEN SUPPORTS IS 20".
  - PROVIDE 3/8" DIAM. WEEP HOLE THRU ONE WALL ONLY OF PIPE STANCHION.
  - INSTALL ANVIL FIGURE 63, TYPE C OR EQUAL. SELECT STANCHION SIZE APPROPRIATE FOR PIPE SIZE AND HEIGHT REQUIREMENTS.

**PS PIPE STANCHION SADDLE**  
 1 NO SCALE



STILLING WELL AND AIR LINE TO TERMINATE 2' ABOVE BOWLS [NOT TO SCALE]

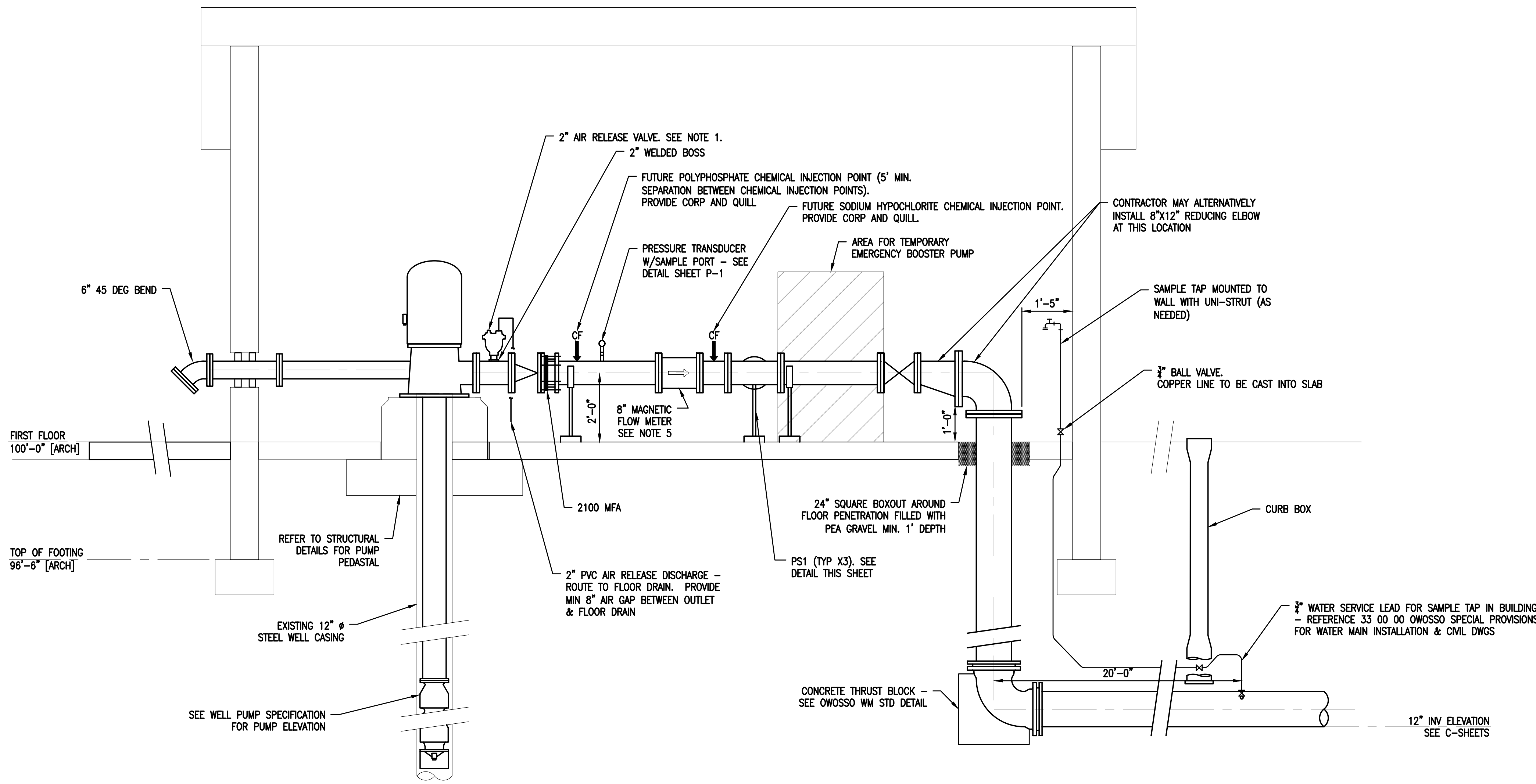
BOTTOM OF PUMP 652.2' MINIMUM  
 113.0' BELOW EXISTING GRADE

TOP OF SCREEN 647.2'  
 118.0' BELOW EXISTING GRADE

BOTTOM OF SCREEN 627.2'  
 138.0' BELOW EXISTING GRADE

**3 WELL PUMP ARRANGEMENT**  
 3/4" = 1'-0"

- NOTES:**
- A MINIMUM 2" AIR AND VACUUM VALVE WITH THROTTLE AS MANUFACTURED BY APCO #144DAT OR VAL-MATIC #102WS SHALL BE PROVIDED ON DISCHARGE LINE BETWEEN CHECK VALVE AND PUMP. MINIMUM 2" AIR RELIEF PIPING SHALL BE SLOPED TO A FLOOR DRAIN.
  - SEE STRUCTURAL DRAWING FOR PUMP PEDESTAL DETAILS
  - ALIGN ROOF HATCH WITH CENTERLINE OF WELL
  - WELL PUMP SHALL BE INSTALLED BY PREAPPROVED WELL DRILLER/INSTALLER - NORTHERN PUMP AND WELL, PEERLESS MIDWEST, OR RAYMER WATER WELLS.
  - MAGNETIC FLOW METER SHALL REQUIRE ZERO LENGTHS OF STRAIGHT PIPE UP AND DOWNSTREAM
  - ALL UNDERGROUND DIP JOINTS SHALL BE RESTRAINED



**2 PROPOSED SECTION VIEW - PROPOSED WELL HOUSE**  
 1/2" = 1'-0"

DRAWING PATH: P:\0000\_010000\2022\202070\_palmer\_3a\_wellhouse\_design\_bld\Drawings\Facilities\202070\_P\_CON\_1.dwg Dec 01, 2022 - 1:36pm

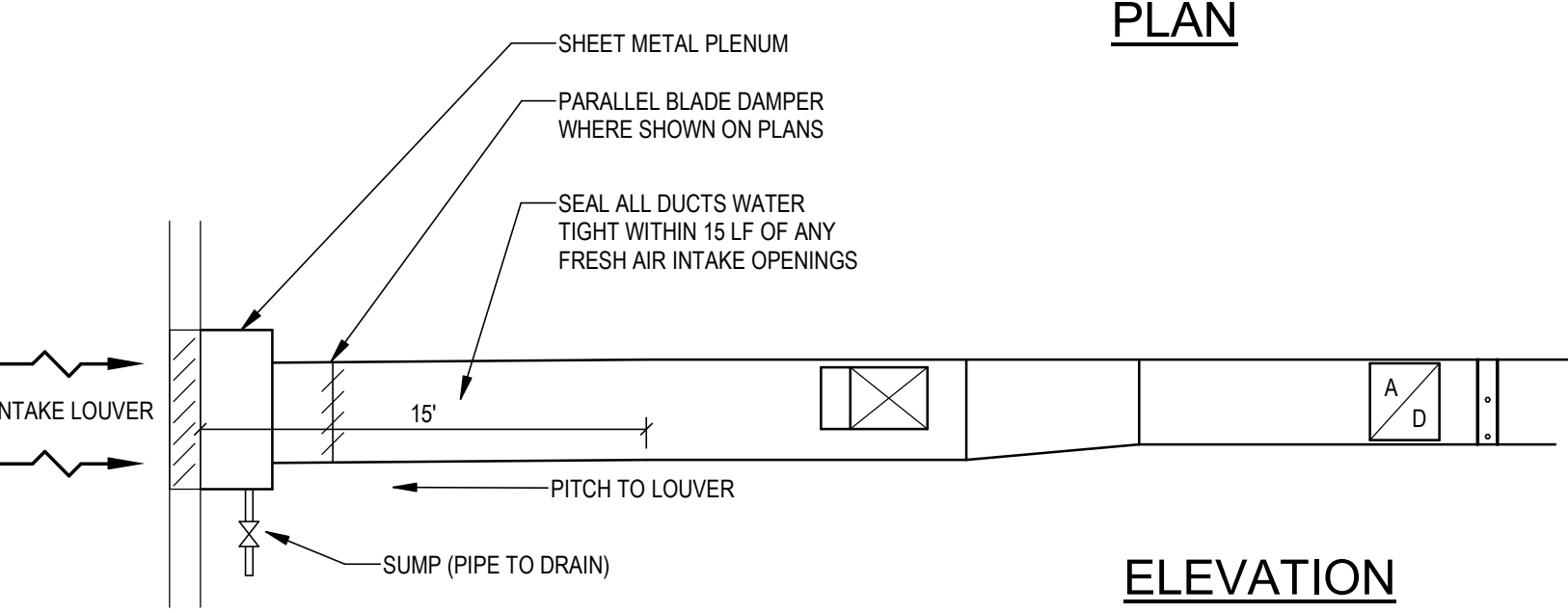
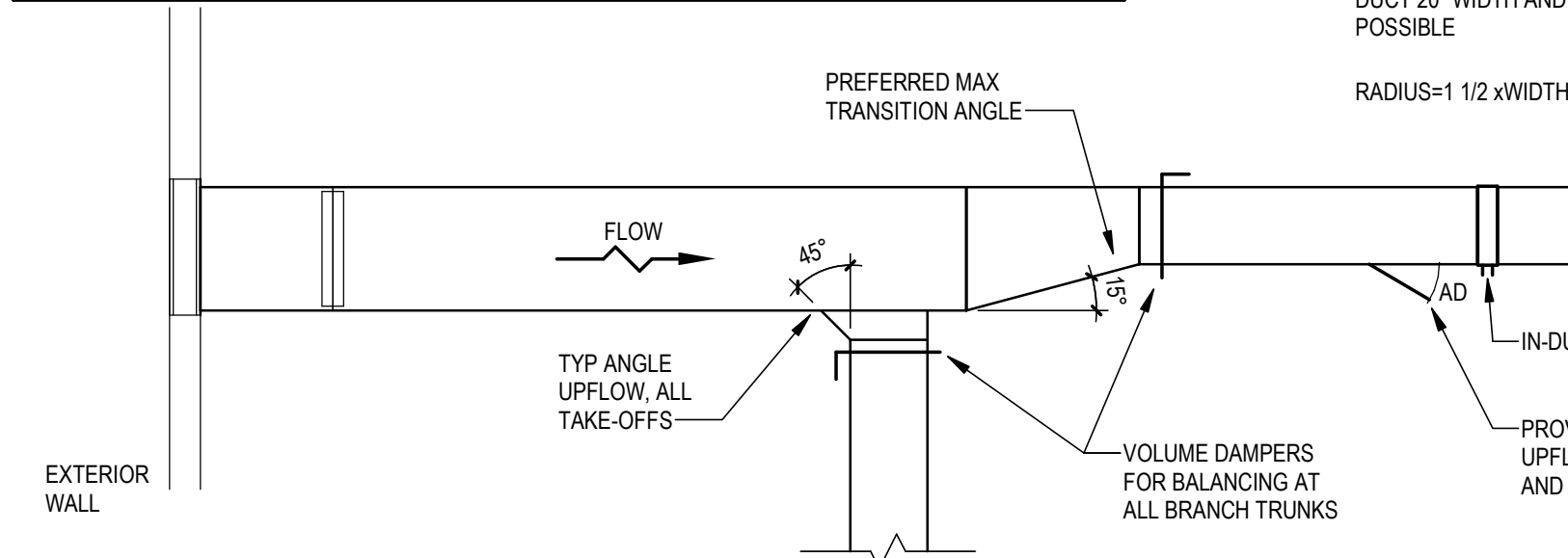
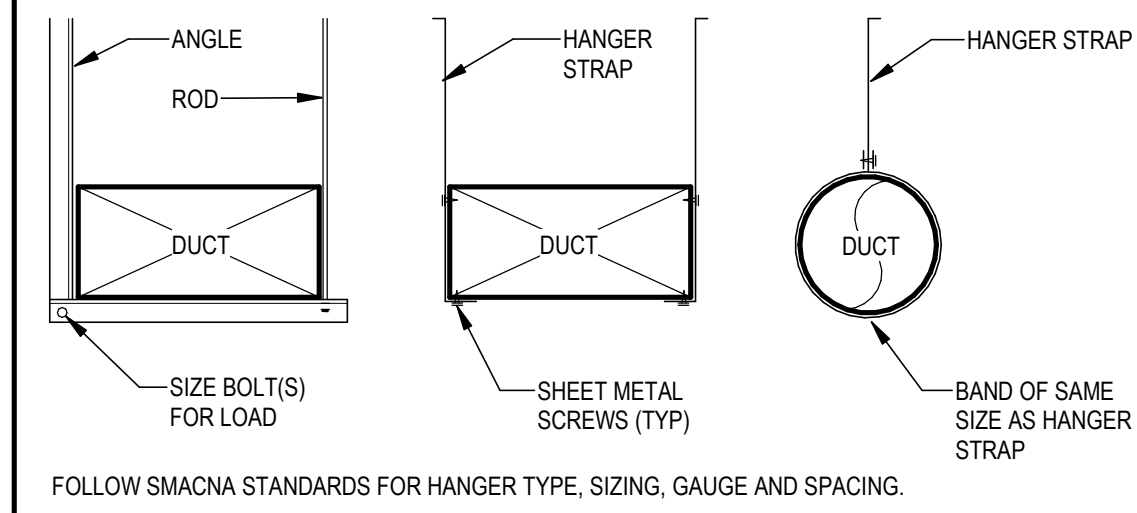
DATE	PROJ NUMBER	ENGINEER	PROJ INGR	AV	CADD	COUNTY	MUNICIPALITY	ISSUE	ISSUED FOR	DATE
###	00202070	MK			SHAWASSEE	OWOSSO				12/01/2022

CITY OF OWOSSO  
 PALMER 3A WELL HOUSE DESIGN  
 PROCESS PLAN & SECTION

COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM

**DUCTWORK REQUIREMENTS**

**DUCT SUPPORT DETAILS**



**PRESSURE CLASS**

1/2", 1" & 2" WG	
CFM PER 100 SQ FT @ 1" WG	
SEAL CLASS	C
RECTANGULAR DUCT	24
ROUND DUCT	12

**NOTES**

- ITEMS AS SHOWN ARE THE MINIMUM REQUIRED AND SHALL BE PROVIDED BY THE CONTRACTOR WHETHER SHOWN ON THE FOLLOWING PLANS OR NOT.
- LISTED DUCT SIZES INDICATE THE INSIDE CLEAR DIMENSIONS, NOT INCLUDING DUCT LINER.
- ALL FLAT SURFACES ON DUCTS AND FITTINGS SHALL BE EITHER CROSS BROKE OR BEADED.
- DUCT SEAMS SHALL BE EITHER PITTSBURG OR BUTTON LOCK.
- STANDING RIB CLEATS ARE REQUIRED ON DUCTS HAVING WIDTHS OF 24" OR MORE.
- ALL JOINTS IN SHEET METAL SHALL BE SEALED WITH AN APPROVED DUCT SEALANT.
- ALL DAMPERS MUST HAVE A POSITION INDICATOR ON THE SHAFT.
- DAMPERS GREATER THAN 8" IN WIDTH MUST BE OPPOSED BLADE.

**PLUMB. ABBR.**

AAV	AIR ADMITTANCE VALVE
AFF	ABOVE FINISHED FLOOR
BFP	BACK FLOW PREVENTER
D	DRINKING FOUNTAIN
DF	DISHWASHER
DWV	DRAIN WASTE & VENT
DH	DEHUMIDIFIER
E	ELECTRIC WATER COOLER
EWC	ELECTRIC WATER COOLER
F	FLOOR DRAIN
FCO	FLOOR CLEAN OUT
H	HOSE BIB
HVAC	HEATING VENTILATING & AIR CONDITIONING
HWCP	HOT WATER CIRCULATION PUMP
L	LAVATORY
M	MANHOLE
MH	MANHOLE
MISC	MISCELLANEOUS
MTD	MOUNTED
O	OVERFLOW DRAIN
OD	OVERFLOW DRAIN
P	PRESSURE REDUCING VALVE
PRV	PRESSURE REDUCING VALVE
R	ROOF DRAIN
RD	ROOF DRAIN
S	SINK
S	SINK
SH	SHOWER
T	TYPICAL
TYP	TYPICAL
U	URINAL
U	URINAL
V	VENT THROUGH ROOF
VRT	VENT THROUGH ROOF
W	WATER CLOSET
WC	WATER CLOSET
WCO	WALL CLEAN OUT
WH	WATER HEATER

**GENERAL NOTES - MECHANICAL**

- FIELD VERIFY LOCATIONS OF EXISTING PIPING THAT MAY CONFLICT WITH NEW CONSTRUCTION AND RELOCATE AS NEEDED.
- COORDINATE LOCATIONS OF THE THERMOSTATS WITH OTHER TRADES.
- PROVIDE BALANCE DAMPERS FOR EACH DIFFUSER/GRILLE AND BRANCH DUCT.
- COORDINATE ROOF MOUNTED EQUIPMENT SIZES WITH ARCHITECTURAL TRADES PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL FIELD VERIFY THE SIZES, LOCATION, ELEVATIONS, AND DETAILS OF ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EQUIPMENT AND MATERIALS IN A "NEW" CONDITION DURING CONSTRUCTION.
- ALL EXTERNALLY ISOLATED HVAC EQUIPMENT SHALL HAVE FLEXIBLE DUCT CONNECTORS.
- ALL CONDENSATE DRAIN PIPING TO TERMINATE TO DRAIN VIA AIR GAP.
- DRAWINGS INDICATE REQUIRED SIZES AND POINTS OF TERMINATION OF PIPES AND DUCTS AND SUGGESTED ROUTES. IT IS THE NOT INTENTION OF THE DRAWINGS TO INDICATE ALL NECESSARY OFFSETS. INSTALL WORK IN MANNER TO CONFORM TO STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. DO NOT SCALE FROM DRAWINGS.

**MECH. ABBR.**

A	AIR	FPS	FEET PER SECOND	O	OUTSIDE AIR
AAV	AUTOMATIC AIR VENT	FT	FOOT / FEET	OA	OUTSIDE AIR
AD	ACCESS DOOR/PANEL	FTR	FIN TUBE RADIATION	P	PUMP
AFF	ABOVE FINISH FLOOR	*F	FAHRENHEIT DEGREE	PH	PHASE
AHU	AIR HANDLING UNIT	G	NATURAL / LP GAS	PRV	PRESSURE REDUCING VALVE
APD	AIR PRESSURE DROP	GA	GAUGE	PSI	POUNDS PER SQUARE INCH
AS	AIR SEPARATOR	GPH	GALLONS PER HOUR	PSIG	POUNDS PER SQUARE INCH GAUGE
B	BOILER	GPM	GALLONS PER MINUTE	R	SUPPLY REGISTER
BDD	BACK DRAFT DAMPER	H	HOT WATER COIL	RA	RETURN AIR
BFP	BACK FLOW PREVENTER	HC	HORSEPOWER	RAD	RADIANT HEATER
C	COMBUSTION AIR	HPS	HIGH PRESSURE STEAM	RD	ROUND DIFFUSER
CA	COMBUSTION AIR	HRRU	HEAT RECOVERY UNIT	RF	RETURN FAN
CFM	CUBIC FEET PER MINUTE	HVAC	HEATING VENTILATING & AIR CONDITIONING	RH	GRAVITY RELIEF HOOD
CG	CEILING GRID	HWR	HEATING WATER RETURN	RPM	REVOLUTIONS PER MINUTE
CHR	CHILLED WATER RETURN	HWS	HEATING WATER SUPPLY	S	SUPPLY AIR
CHS	CHILLED WATER SUPPLY	HX	HEAT EXCHANGER	SA	SUPPLY AIR
COND	CONDENSING UNIT	I	INCH / INCHES	SC	STEAM COIL
CONV	CONVECTOR	IN	INCH / INCHES	SD	SMOKE DAMPER
CR	CONDENSATE RETURN	K	KITCHEN HOOD	SF	SUPPLY FAN
CUH	CABINET UNIT HEATER	L	LOUVER	SP	STATIC PRESSURE
D	DRY BULB	LAT	LEAVING AIR TEMPERATURE	STD	STANDARD
DB	DRY BULB	LDB	LEAVING DRY BULB	STM	STEAM
DIA Ø	DIAMETER	LF	LINEAL FEET	SWG	SIDE WALL GRILLE
DN	DOWN	LPS	LOW PRESSURE STEAM	SWR	SIDE WALL REGISTER
E	EXHAUST AIR	LWB	LEAVING WET BULB	T	TYPICAL
EA	ENTERING AIR TEMPERATURE	LWT	LEAVING WATER TEMPERATURE	U	UNIT HEATER
EDB	ENTERING DRY BULB	M	MAXIMUM	V	VENT
EF	EXHAUST FAN	MBH	THOUSAND BTU PER HOUR	VAV	VARIABLE AIR VOLUME
ESP	EXTERNAL STATIC PRESSURE	MCA	MINIMUM CIRCUIT AMPS	VD	VANED DIFFUSER
ET	EXPANSION TANK	MIN	MINIMUM	W	MISCELLANEOUS
EWB	ENTERING WET BULB	MISC	MISCELLANEOUS	WH	WATER HEATER
EWT	ENTERING WATER TEMPERATURE	MTD	MOUNTED	WPD	WATER PRESSURE DROP
EXST	EXISTING	MUA	MAKE-UP AIR UNIT		
FCU	FAN COIL UNIT				
FPM	FEET PER MINUTE				

**GAS LOAD SCHEDULE**

MARK	DESCRIPTION	BTU / HOUR	CU FT / HOUR	REMARKS
GUH-1	GAS UNIT HEATER	45,000	45	
NA	GENERATOR	2,220,000	2,220	BASED ON 7-11 IN WC AND GENERATOR OPTION FOR SAME
TOTALS		2,265,000	2,265	

**PLUMBING SYMBOLS LEGEND**

VALVES	PIPE FITTINGS	PIPE FITTINGS
		<b>OTHER SYMBOLS</b>

**GENERAL NOTES - PLUMBING**

- ALL PLUMBING EQUIPMENT AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE 2018 STATE OF MICHIGAN PLUMBING CODE AND THE 2018 INTERNATIONAL PLUMBING CODE.
- THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING A PLUMBING PERMIT AND INSPECTIONS. A FINAL INSPECTION CERTIFICATE SHALL BE SUBMITTED BEFORE FINAL PAYMENT WILL BE ISSUED.
- THE PLUMBING CONTRACTOR SHALL FURNISH SHOP DRAWINGS ON FIXTURES, APPURTENANCES AND MATERIALS THAT HE INTENDS TO FURNISH, FOR APPROVAL TO OWNER.
- A BOUND MANUAL SHALL BE SUBMITTED UPON COMPLETION WITH MAINTENANCE INSTRUCTIONS, PARTS LISTS, AND MANUFACTURER'S WARRANTIES. ALSO A WARRANTY FROM THE PLUMBING CONTRACTOR ALONG WITH RECORD DRAWINGS SHALL BE SUBMITTED AT THIS TIME.
- PLUMBING PIPING: DOMESTIC WATER: ABOVE GROUND, 2 1/2" AND SMALLER, TYPE L, SOLDERED (955) JOINTS
- PLUMBING PIPING: DWV: HUB & SPIGOT CAST IRON ASTM-A74, HUBLESS CAST IRON ASTM-A888, SCHEDULE 40 PVC ASTM-D1785 AND D2665, FITTINGS ASTM-D2466.
- PLUMBING PIPING: GAS PIPING: STEEL PIPE: ASTM A53/A TYPE E OR S; GRADE B; BLACK WALL THICKNESS OF WROUGHT STEEL PIPE SHALL COMPLY WITH ASME B36-10M. COPPER TUBE ASTM B88, TYPE L, ANNEALED TEMPER.

**HVAC SYMBOLS LEGEND**

DUCTS		DIFFUSERS & GRILLES		HVAC SYMBOLS		OTHER SYMBOLS	
EXHAUST AIR		CEILING DIFFUSER		MANUAL VOLUME DAMPER		EQUIPMENT INDICATOR	
OUTSIDE AIR		LINEAR SLOT DIFFUSER		MOTORIZED DAMPER			
RETURN AIR		WALL DIFFUSER/GRILLE		FIRE DAMPER			
SUPPLY AIR		FLOOR REGISTER		SMOKE DAMPER			
		CEILING GRILLE		SMOKE AND FIRE DAMPER			
		TURNING VANES		THERMOSTAT			
		12x12 DUCT WIDTH x HEIGHT		HUMIDISTAT			
		12ø ROUND DUCT DIAMETER		CONNECT TO EXISTING			
		101.1 MARK					
		200 FLOW DIFFUSER INDICATOR					

**OHM**  
ARCHITECTS ENGINEERS PLANNERS  
201 East Ellsworth St. Unit 100  
Midland, MI 48640  
PH 989.956.2020  
OHM-ADVISORS.COM

12/01/2022  
ISSUE: ISSUED FOR BID  
REVISIONS:

DATE: 12/01/2022  
PROJECT NUMBER: 0202-22-0070  
MUNICIPALITY: OWASSO  
COUNTY: SHAWANASSEE  
CADD: KB  
PROJ/MGR: AV  
ENGR/ARCH: ES

CITY OF OWASSO  
**PALMER 3A WELLHOUSE**  
Palmer Street  
Owosso, MI 48867

**MECHANICAL & PLUMBING NOTES AND SYMBOLS**



**GAS-FIRED UNIT HEATER SCHEDULE**

MARK	LOCATION	CFM	HEATING COIL		ELECTRICAL			MANUFACTURER	MODEL	NOTES
			INPUT (MBH)	OUTPUT (MBH)	V/PHHZ	MCA	MOC/P			
GUH-1	WELLHOUSE	630	45	37	115/1/60	2.4	15	REZNOR	UDZ	1

NOTES: 1. SEPARATED COMBUSTION, 4" COMBUSTION AIR AND 4" VENT. PROVIDE WITH WALL THERMOSTAT AND WALL MOUNTING BRACKET.

**LOUVER AND DAMPER SCHEDULE**

MARK	SERVICE	CFM	SIZE (IN.)	MAX PRESS. DROP (IN-WG)	MAX VELOCITY (FPM)	MINIMUM FREE AREA (FT²)	MANUFACTURER	MODEL	NOTES

NOTES: 1. PROVIDE WITH ALUMINUM INSECT SCREEN, INTEGRAL DAMPER AND 120V ACTUATOR, INTERLOCK WITH EF-1

**PORTABLE DEHUMIDIFIER SCHEDULE**

MARK	CFM	FILTER	WATER REMOVAL RATE (PINTS/DAY)	ELECTRICAL		MANUFACTURER	MODEL	NOTES
				V/PHHZ	POWER			
DH-1	300	WASHABLE	120	115/1/60	7.6	SEAIRA GLOBAL	WATCHDOG NXT-120C	

**PLUMBING FIXTURE SCHEDULE**

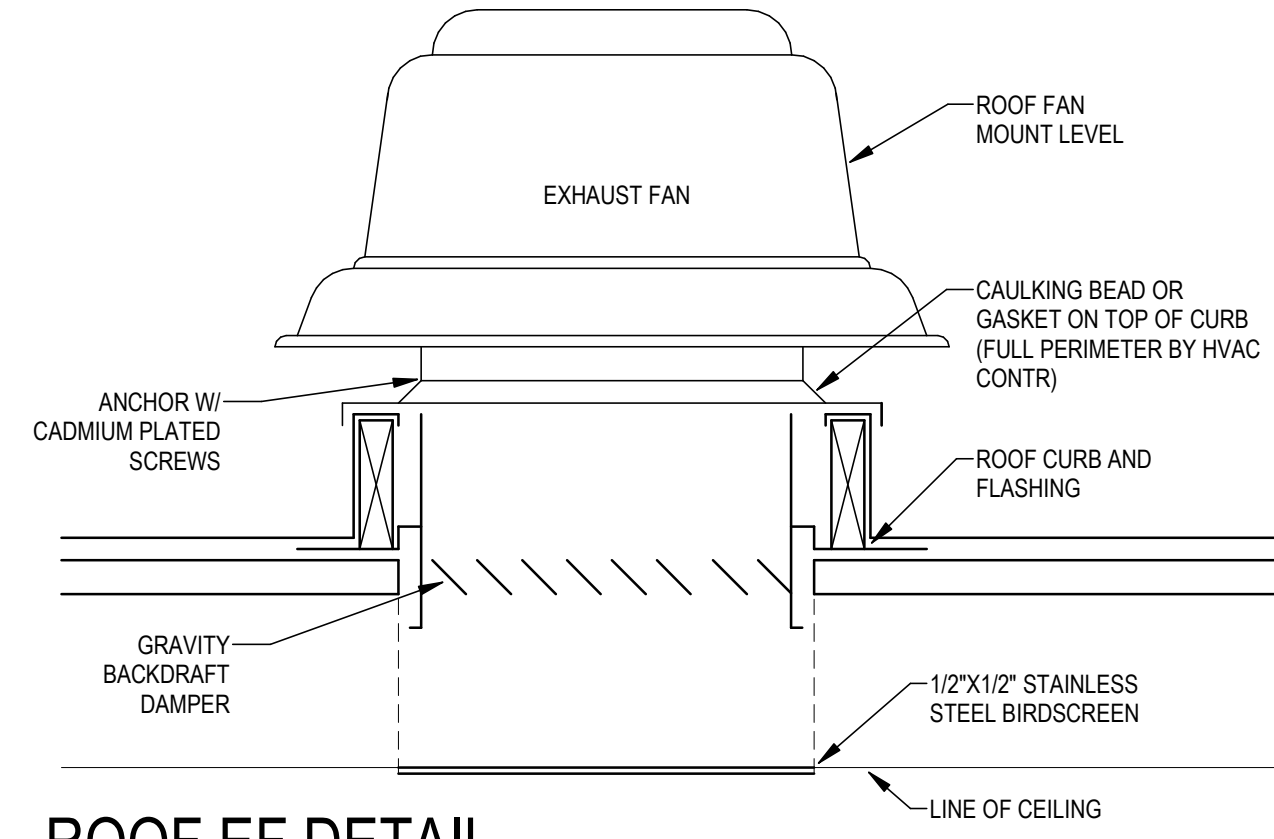
TYPE	DESCRIPTION	MFR	CATALOG NO.	TRIM
FD-1	SQUARE HEAVY DUTY FLOOR DRAIN	ZURN	Z-609	DURACOATED CAST IRON BODY WITH BOTTOM OUTLET, SEEPAGE PAN, AND HEAVY DUTY CAST IRON ANTI-TILT SLOTTED GRATE AND COMB.

REMARKS: PROVIDED WITH TRAP, MECHANICAL TRAP SEAL

**FAN SCHEDULE**

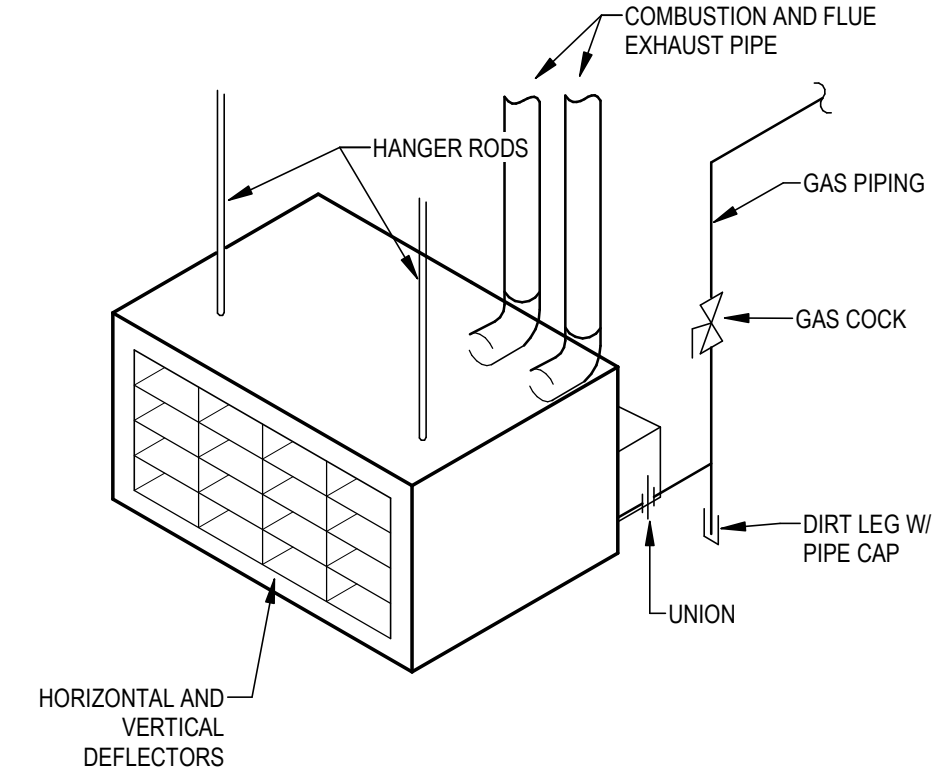
MARK	SERVICE	LOCATION	FAN TYPE	DRIVE TYPE	CFM	RPM	ESP (IN-WG)	ELECTRICAL		CONTROLS	MANUFACTURER	MODEL	WEIGHT	NOTES
								HP	V/PHHZ					
EF-1	WELLHOUSE	ROOF	DOWNBLAST	DIRECT	1250	1725	0.5	1/3	115/1/60	REVERSE THERMOSTAT	GREENHECK	G-100-A	55	1

NOTES: 1. PROVIDE WITH THERMOSTAT, GRAVITY BACKDRAFT DAMPER, STAINLESS STEEL HARDWARE, ROOF CURB, INTERLOCK WITH LOUVER DAMPER L-1



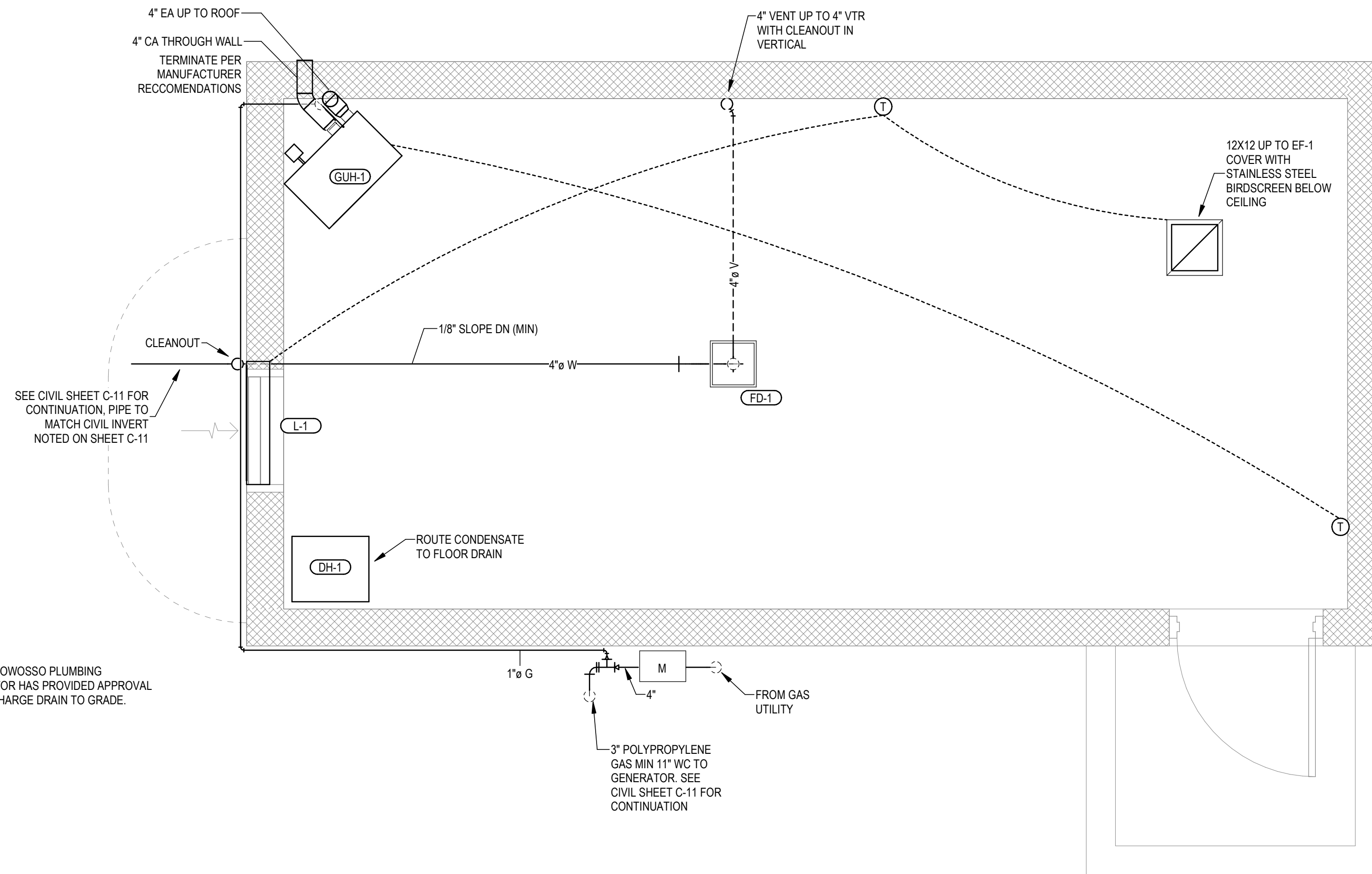
**ROOF EF DETAIL**

N.T.S.



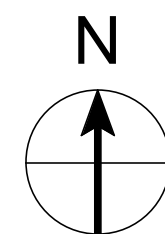
**GAS FIRED UNIT HEATER DETAIL**

N.T.S.



NOTE: CITY OF OWOSSO PLUMBING INSPECTOR HAS PROVIDED APPROVAL TO DISCHARGE DRAIN TO GRADE.

**1 PALMER BUILDING FLOOR PLAN**  
1/2" = 1'-0"



ARCHITECTS ENGINEERS PLANNERS

201 East Ellsworth St. Unit 100  
Midland, MI 48640  
PH 989.956.2020

OHM-ADVISORS.COM

12/01/2022

ISSUE: ISSUED FOR BID REVISIONS:

DATE

PROJ NUMBER

ENG ARCH

ES

PROJ MGR

AV

CADD

KB

COUNTY

SHAWANSEE

MUNICIPALITY

OWOSSO

CITY OF OWOSSO

PALMER 3A WELLHOUSE

Palmer Street

Owosso, MI 48867

PALMER BLDG FLOOR PLAN

SHEET

M-2



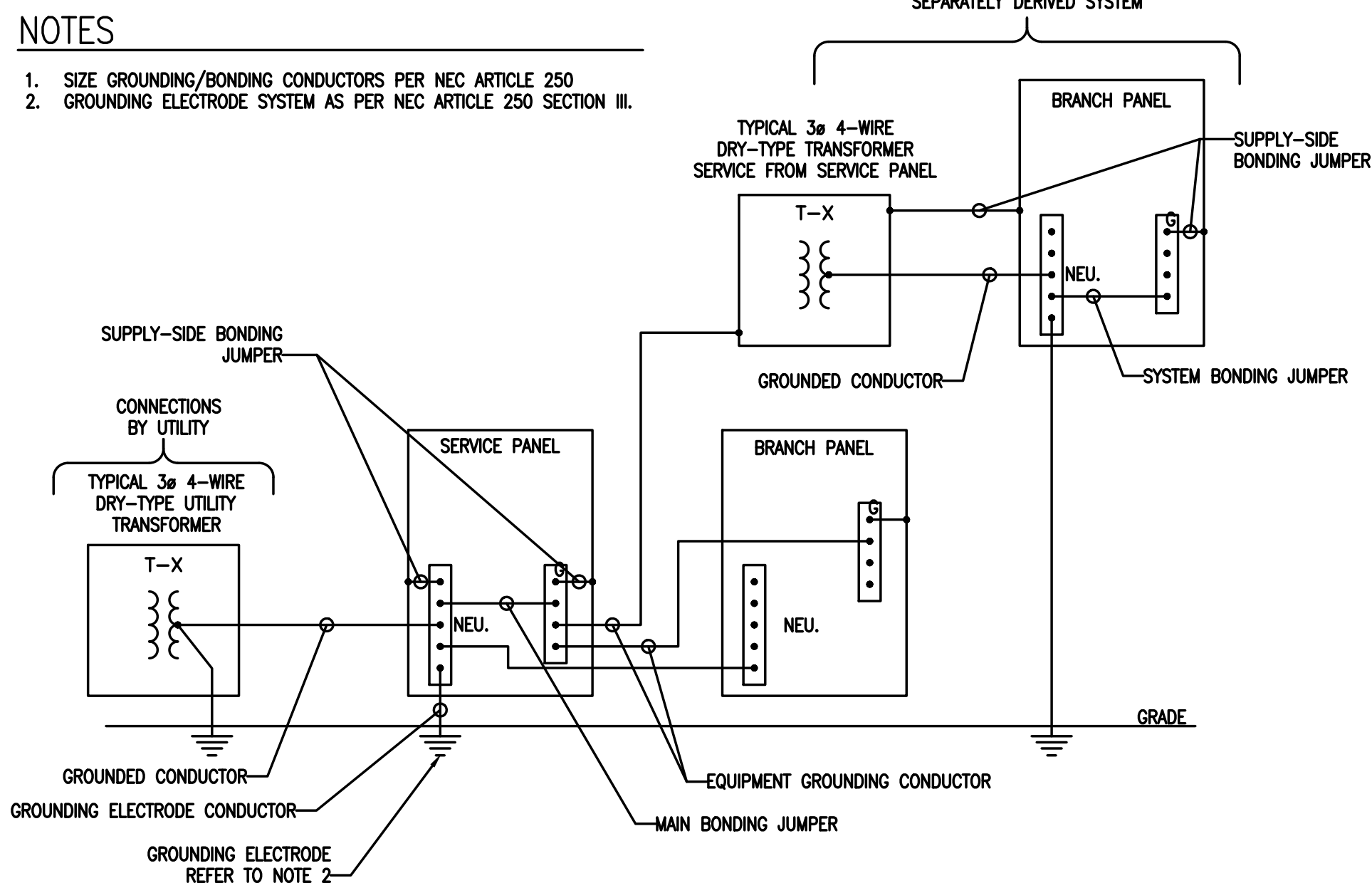
DRAWING PATH: P:\0000\_01000020220070\_Palmer\_3A\_Wellhouse\_Design\_Bldg\Drawings\Civil\Plotting\Electrical\GENERAL ELECTRICAL INFORMATION.dwg Dec 01, 2022 - 3:27pm

**ELEC. ABBREVIATIONS**

♯	SPECIAL PHASE
A	AMPERE
AFF	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
CAT	CATALOGUE
CB	CIRCUIT BREAKER
CMU	CONCRETE MASONRY UNIT
CO.	COMPANY
CUH	CABIN UNIT HEATER
E	ELECTRICAL CONTRACTOR
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EWC	ELECTRIC WATER COOLER
F	FIRE ALARM
FA	FIRE ALARM
G	GROUND FAULT CIRCUIT INTERRUPTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	EQUIPMENT GROUND
H	HAND OFF AUTO
HOA	HIGH INTENSITY DISCHARGE
HID	HIGH INTENSITY DISCHARGE
HPS	HIGH PRESSURE SODIUM
HVAC	HEATING VENTILATION & AIR CONDITIONING
K	KEY OPERATED DEVICE
KVA	KILOVOLT-AMPERES
KW	KILO-WATTS
L	LIGHT EMITTING DIODE
LED	LIGHT EMITTING DIODE
M	MAIN CIRCUIT BREAKER
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MH	METAL HALIDE
MISC	MISCELLANEOUS
MLO	MAIN LUG ONLY MOUNTED
MTD	MOUNTED
N	NEUTRAL
NEU	NEUTRAL
NO	NUMBER
P	PILOT
PL	PILOT
RECPT	RECEPTACLE
RTU	ROOF TOP UNIT
T	TELEPHONE TRANSFORMER
TEL	TELEPHONE TRANSFORMER
TRANS	TRANSFORMER
TV	TELEVISION
TYP	TYPICAL
U	UNDERGROUND ELECTRIC UNIT HEATER
UGE	UNDERGROUND ELECTRIC UNIT HEATER
LH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT-AMPERES
W	WIRE
WNC	WIRELESS NETWORK CONTROLLER
WP	WEATHERPROOF

**GENERAL NOTES - ELECTRICAL**

- ALL ELECTRICAL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE CURRENT NATIONAL ELECTRICAL CODE AND ANY STATE/LOCAL AMENDMENTS.
- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACQUISITION OF AN ELECTRICAL PERMIT AND SCHEDULING OF THE NECESSARY INSPECTIONS. UPON COMPLETION OF THE WORK THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE OWNER EVIDENCE OF INSPECTION APPROVAL.
- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION REQUIRED WITH THE ELECTRIC UTILITY SERVING THE FACILITY. UTILITY COSTS SHALL BE PAID SEPARATELY BY THE OWNER.



**GROUNDING BONDING DIAGRAM**  
NO SCALE

**NOTES**

- SIZE GROUNDING/BONDING CONDUCTORS PER NEC ARTICLE 250
- GROUNDING ELECTRODE SYSTEM AS PER NEC ARTICLE 250 SECTION III.

**ELECTRICAL LEGEND**

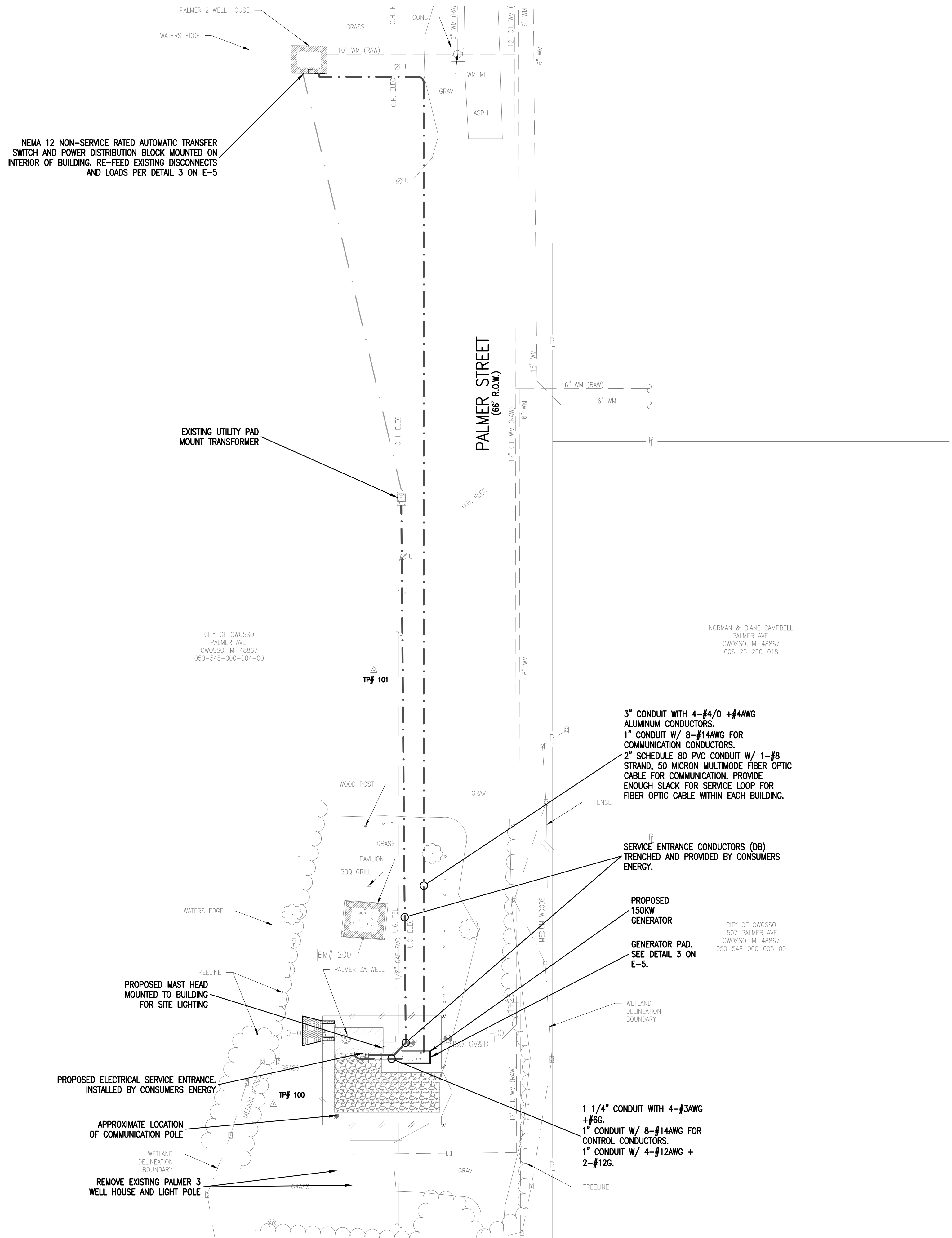
<p><b>LIGHT FIXTURES</b></p> <ul style="list-style-type: none"> <li>☐ SURFACE / CEILING MOUNT</li> <li>● EMERGENCY SURFACE / CEILING MOUNT</li> <li>○ PENDANT / CHAIN MOUNT</li> <li>◻ RECESSED MOUNT</li> <li>◻ EMERGENCY RECESSED MOUNT</li> <li>△ TRACK STRIP</li> <li>○ (INT.) WALL MOUNT</li> <li>○ (EXT.) WALL MOUNT</li> <li>○ (INT.) EMERGENCY WALL MOUNT</li> <li>○ (EXT.) EMERGENCY WALL MOUNT</li> <li>○ EXTERIOR POLE MOUNT</li> <li>○ EXTERIOR POST MOUNT</li> <li>○ INTERIOR EMERGENCY WALL PACK</li> <li>○ (WALL) EXIT SIGN</li> <li>○ (CEILING) EXIT SIGN</li> <li>○ (LIGHT) CEILING FAN</li> <li>○ (NO LIGHT) CEILING FAN</li> </ul>	<p><b>RECEPTACLE OUTLETS</b></p> <ul style="list-style-type: none"> <li>☐ SIMPLEX RECEPTACLE</li> <li>☐ DUPLEX GROUNDED RECEPTACLE</li> <li>☐ CTR MOUNTED ABOVE COUNTER</li> <li>☐ GFCI</li> <li>☐ GC GFCI-MOUNTED ABOVE COUNTER</li> <li>☐ U DUAL USB PORTS</li> <li>☐ UC DUAL USB PORTS ABOVE COUNTER</li> <li>☐ WP WEATHERPROOF COVER W/ GFCI</li> <li>☐ T TAMPERPROOF</li> <li>☐ TC TAMPERPROOF ABOVE COUNTER</li> <li>☐ TGC TAMPERPROOF GFCI ABOVE COUNTER</li> <li>☐ 208V, 1 # STRAIGHT BLADE RECEPT</li> <li>☐ D DRYER RECEPTACLE</li> <li>☐ R RANGE RECEPTACLE</li> <li>☐ QUADRUPLX RECEPTACLE</li> <li>☐ DUPLEX RECEPT ON EMERGENCY POWER</li> <li>☐ FLOOR BOX</li> <li>☐ 3# RECEPTACLE</li> </ul> <p><b>SWITCH OUTLETS</b></p> <p>SWITCHES: X = DESIGNATION BELOW Z = ZONE DESIGNATION</p> <ul style="list-style-type: none"> <li>1 SINGLE POLE</li> <li>2 TWO POLE</li> <li>3 THREE WAY</li> <li>4 FOUR WAY</li> <li>DM DIMMER</li> <li>F FAN</li> <li>K KEY OPERATED</li> <li>LV LOW VOLTAGE</li> <li>M MOTION DETECTION</li> <li>P PILOT LIGHT</li> <li>T TIMER</li> </ul>	<p><b>FIRE ALARM SYSTEM</b></p> <ul style="list-style-type: none"> <li>☐ OUTDOOR BELL / CHIME</li> <li>☐ SMOKE DETECTOR</li> <li>☐ SMOKE DETECTOR WITH AUDIBLE BASE</li> <li>☐ SMOKE/CARBON MONOXIDE DETECTOR</li> <li>☐ DUCT SMOKE DETECTOR</li> <li>☐ (HD) HEAT DETECTOR</li> <li>☐ CEILING WALL FIRE ALARM HORN/SROBE</li> <li>☐ FIRE ALARM STROBE</li> <li>☐ FIRE ALARM HORN</li> <li>☐ FIRE ALARM SPEAKER/SROBE</li> <li>☐ FIRE ALARM SPEAKER</li> <li>☐ FIRE ALARM PULL STATION</li> <li>☐ (HH) ELECTRO./MAG DOOR HOLD OPEN</li> <li>☐ (ELR) END OF LINE RESISTOR</li> <li>☐ (FS) FIRE ALARM FLOW SWITCH</li> <li>☐ (PS) FIRE ALARM PRESSURE SWITCH</li> <li>☐ (TS) FIRE ALARM TAMPER SWITCH</li> <li>☐ (FAA) FIRE ALARM ANNUNCIATOR PANEL</li> <li>☐ (FACP) FIRE ALARM CONTROL PANEL</li> <li>☐ (HSS) HOOD SUPPRESSION SYSTEM FIRE ALARM CONTACT</li> </ul> <p><b>TELEPHONE/COMMUNICATIONS</b></p> <p>CEILING WALL FLOOR FURNITURE</p> <ul style="list-style-type: none"> <li>X=NUMBER AND TYPE OF PORTS</li> <li>C COAXIAL PORT</li> <li>D DATA PORT</li> <li>P PHONE PORT</li> <li>W WIRELESS ACCESS POINT</li> <li>☐ (S) SPEAKER</li> <li>☐ (IC) INTERCOM CALL BOX</li> <li>☐ (E) ENTRANCE CALL SYSTEM</li> <li>☐ (B) BELL</li> <li>☐ (M) MICROPHONE JACK</li> <li>☐ (PS) POWER SUPPLY</li> <li>☐ (WG) REQUIRES WIRE GUARD</li> <li>☐ (NURSE) NURSE CALL MAIN PANEL</li> <li>☐ (N) NURSE CALL PULL STATION</li> <li>☐ (C) NURSE CALL LIGHT</li> <li>☐ (C) CLOCK</li> </ul>																												
<p><b>POWER DISTRIBUTION</b></p> <ul style="list-style-type: none"> <li>☐ DISCONNECT SWITCH</li> <li>☐ FUSED DISCONNECT SWITCH</li> <li>☐ COMBINATION MOTOR STARTER W/ DISCONNECT SWITCH</li> <li>☐ MOTOR STARTER</li> <li>☐ (M) ELECTRICAL METER</li> <li>☐ (DP) DISTRIBUTION PANEL</li> <li>☐ (P) ELECTRICAL POWER PANEL SURFACE MOUNT</li> <li>☐ (P) ELECTRICAL POWER PANEL FLUSH MOUNT</li> <li>☐ (R) RELAY</li> <li>☐ (T) ELECTRICAL TRANSFORMER</li> <li>☐ (PB) ELECTRICAL PULL BOX</li> <li>☐ VARIABLE FREQUENCY DRIVE</li> <li>☐ SINGLE PHASE MOTOR</li> <li>☐ THREE PHASE MOTOR</li> <li>☐ (HH) HAND HOLE</li> <li>☐ (J) JUNCTION BOX</li> </ul>	<p><b>SENSORS</b>: X = DESIGNATION BELOW</p> <ul style="list-style-type: none"> <li>☐ (D) DAYLIGHT</li> <li>☐ (O) OCCUPANCY</li> <li>☐ (V) VACANCY</li> <li>☐ (ES) EMERGENCY STOP SWITCH</li> <li>☐ (PB) PUSH BUTTON SWITCH</li> <li>☐ (PC) PHOTOCELL</li> <li>☐ (C) CEILING MOUNTED PULL SWITCH</li> <li>☐ (W) WIRELESS NETWORK LIGHTING CONTROLLER</li> <li>☐ (XX) CONTROLLER INDICATOR</li> </ul> <p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>☐ (CR) CARD READER</li> <li>☐ (M) MAGNETIC SWITCH (DOOR CONTACT)</li> <li>☐ (EL) ELECTRONIC DOOR LOCK</li> <li>☐ (MO) MOTORIZED DOOR OPERATOR</li> <li>☐ (ES) ELECTRIC STRIKE</li> <li>☐ (K) KEYPAD ENTRY DEVICE</li> <li>☐ (SC) SECURITY CAMERA</li> </ul>	<p><b>WIRES</b></p> <table border="1"> <tr> <th></th> <th>PROPOSED</th> <th>EXISTING</th> <th>DEMOLISH</th> </tr> <tr> <td>POWER CIRCUIT WIRING</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>UNDERGROUND WIRING</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>SWITCH LOOP WIRING</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>UN-SWITCHED HOT WIRING</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>LOW VOLTAGE WIRING</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>DATA WIRING</td> <td>---</td> <td>---</td> <td>---</td> </tr> </table>		PROPOSED	EXISTING	DEMOLISH	POWER CIRCUIT WIRING	---	---	---	UNDERGROUND WIRING	---	---	---	SWITCH LOOP WIRING	---	---	---	UN-SWITCHED HOT WIRING	---	---	---	LOW VOLTAGE WIRING	---	---	---	DATA WIRING	---	---	---
	PROPOSED	EXISTING	DEMOLISH																											
POWER CIRCUIT WIRING	---	---	---																											
UNDERGROUND WIRING	---	---	---																											
SWITCH LOOP WIRING	---	---	---																											
UN-SWITCHED HOT WIRING	---	---	---																											
LOW VOLTAGE WIRING	---	---	---																											
DATA WIRING	---	---	---																											
<p><b>RACEWAY NOTES</b></p> <ol style="list-style-type: none"> <li>MINIMUM SIZE OF RIGID CONDUIT SHALL BE 3/4".</li> <li>MINIMUM SIZE OF FLEX CONDUIT SHALL BE 1/2".</li> <li>MINIMUM SIZE WALL BOX IN CMU SHALL BE 4"x4".</li> <li>MINIMUM SIZE OF UNDERGROUND CONDUIT SHALL BE 1 1/4".</li> </ol>																														

DATE: 02/02/2020 PRO NUMBER: 00202070 ES PROJ INGR: AV MUNICIPALITY: OWASSO COUNTY: SHAWANSEE CAD: RB

CITY OF OWASSO  
PALMER 3A WELL HOUSE DESIGN  
GENERAL ELECTRICAL INFORMATION  
VALUE

COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM

DRAWING PATH: P:\0000\_010000\020220070\_Palmer\_3A\_Wellhouse\_Design\_BidDrawings\CivilPlans\_Constr\22070SE-elect.dwg Dec 01, 2022 - 3:27pm



NEMA 12 NON-SERVICE RATED AUTOMATIC TRANSFER SWITCH AND POWER DISTRIBUTION BLOCK MOUNTED ON INTERIOR OF BUILDING. RE-FEED EXISTING DISCONNECTS AND LOADS PER DETAIL 3 ON E-5

EXISTING UTILITY PAD MOUNT TRANSFORMER

CITY OF OWOSSO  
PALMER AVE.  
OWOSSO, MI 48867  
050-548-000-004-00

NORMAN & DIANE CAMPBELL  
PALMER AVE.  
OWOSSO, MI 48867  
006-25-200-018

CITY OF OWOSSO  
1507 PALMER AVE.  
OWOSSO, MI 48867  
050-548-000-005-00

3" CONDUIT WITH 4-#4/0 +#4AWG ALUMINUM CONDUCTORS.  
1" CONDUIT W/ 8-#14AWG FOR COMMUNICATION CONDUCTORS.  
2" SCHEDULE 80 PVC CONDUIT W/ 1-#8 STRAND, 50 MICRON MULTIMODE FIBER OPTIC CABLE FOR COMMUNICATION. PROVIDE ENOUGH SLACK FOR SERVICE LOOP FOR FIBER OPTIC CABLE WITHIN EACH BUILDING.

SERVICE ENTRANCE CONDUCTORS (DB) TRENCHED AND PROVIDED BY CONSUMERS ENERGY.

PROPOSED 150KW GENERATOR

GENERATOR PAD. SEE DETAIL 3 ON E-5.

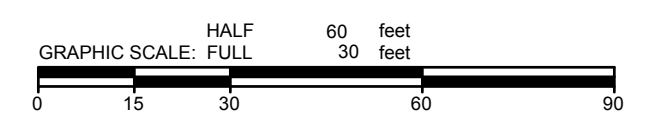
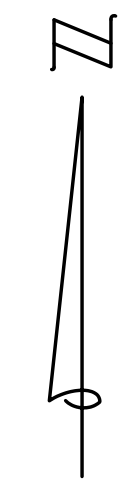
1 1/4" CONDUIT WITH 4-#3AWG +#6G.  
1" CONDUIT W/ 8-#14AWG FOR CONTROL CONDUCTORS.  
1" CONDUIT W/ 4-#12AWG + 2-#12G.

PROPOSED ELECTRICAL SERVICE ENTRANCE. INSTALLED BY CONSUMERS ENERGY

APPROXIMATE LOCATION OF COMMUNICATION POLE

REMOVE EXISTING PALMER 3 WELL HOUSE AND LIGHT POLE

PROPOSED MAST HEAD MOUNTED TO BUILDING FOR SITE LIGHTING



**OHM**  
ARCHITECTS ENGINEERS PLANNERS  
201 E Ellsworth St, Unit 100  
Midland, MI 48840  
P (989) 956-2020  
OHM-ADVISORS.COM

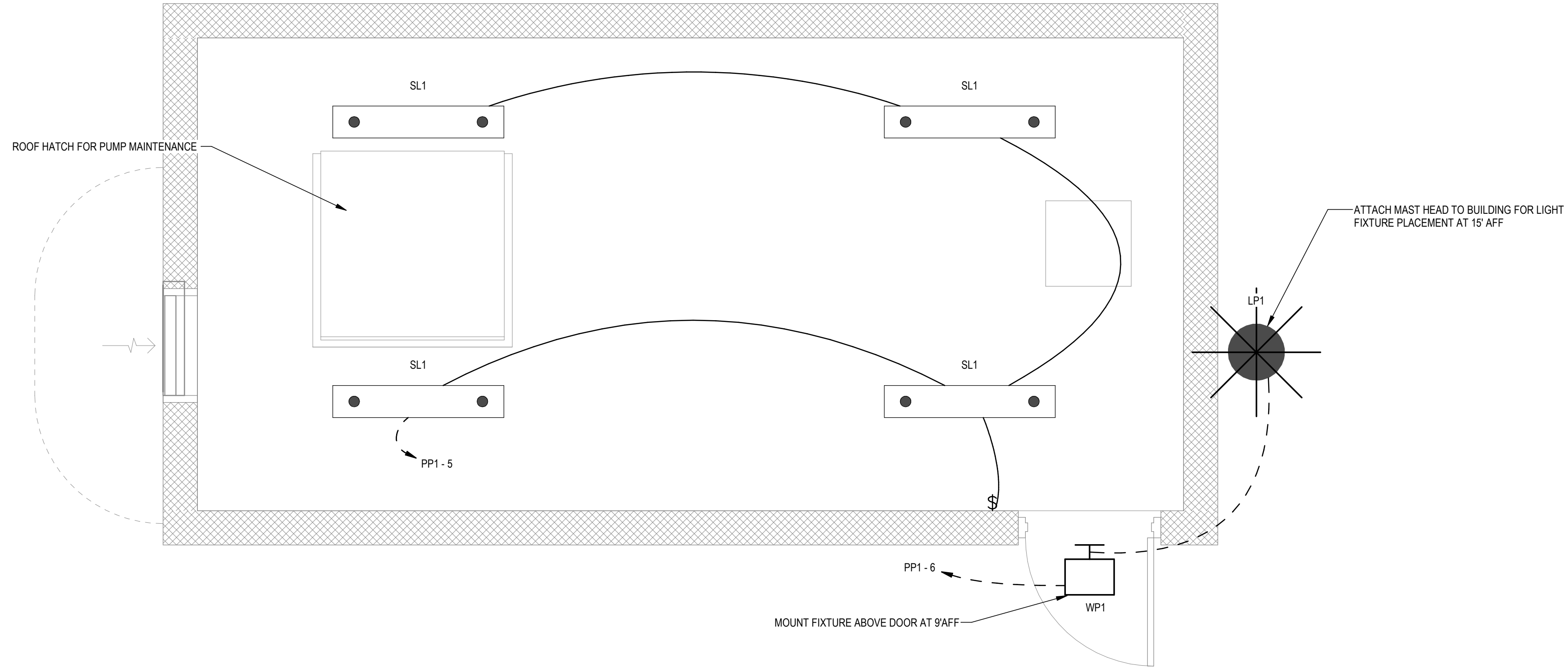
ISSUE	ISSUED FOR BID	12/01/2022
REVISIONS		

DATE	PROJ NUMBER	ENG ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
02/02/2020	02022070	SW	AV	SW	SHAWANSEE	OWOSSO
<b>CITY OF OWOSSO PALMER 3A WELL HOUSE DESIGN ELECTRICAL SITE PLAN</b>						
VALUE						

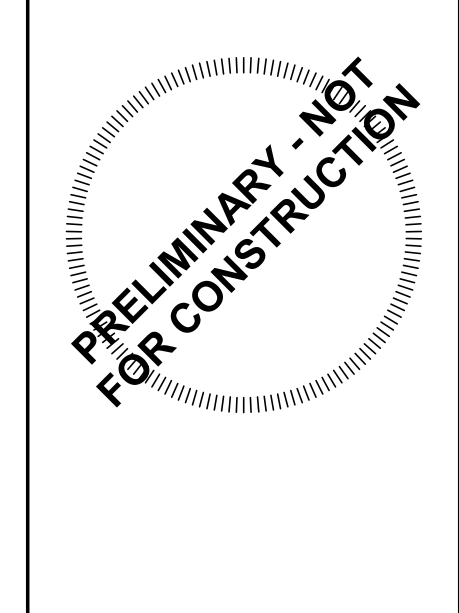
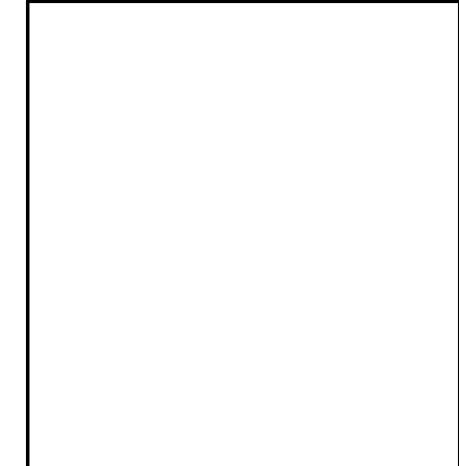
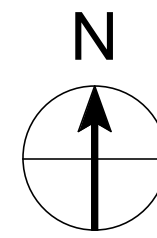


Know what's below.  
Call before you dig.

COPYRIGHT 2019 OHM ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM

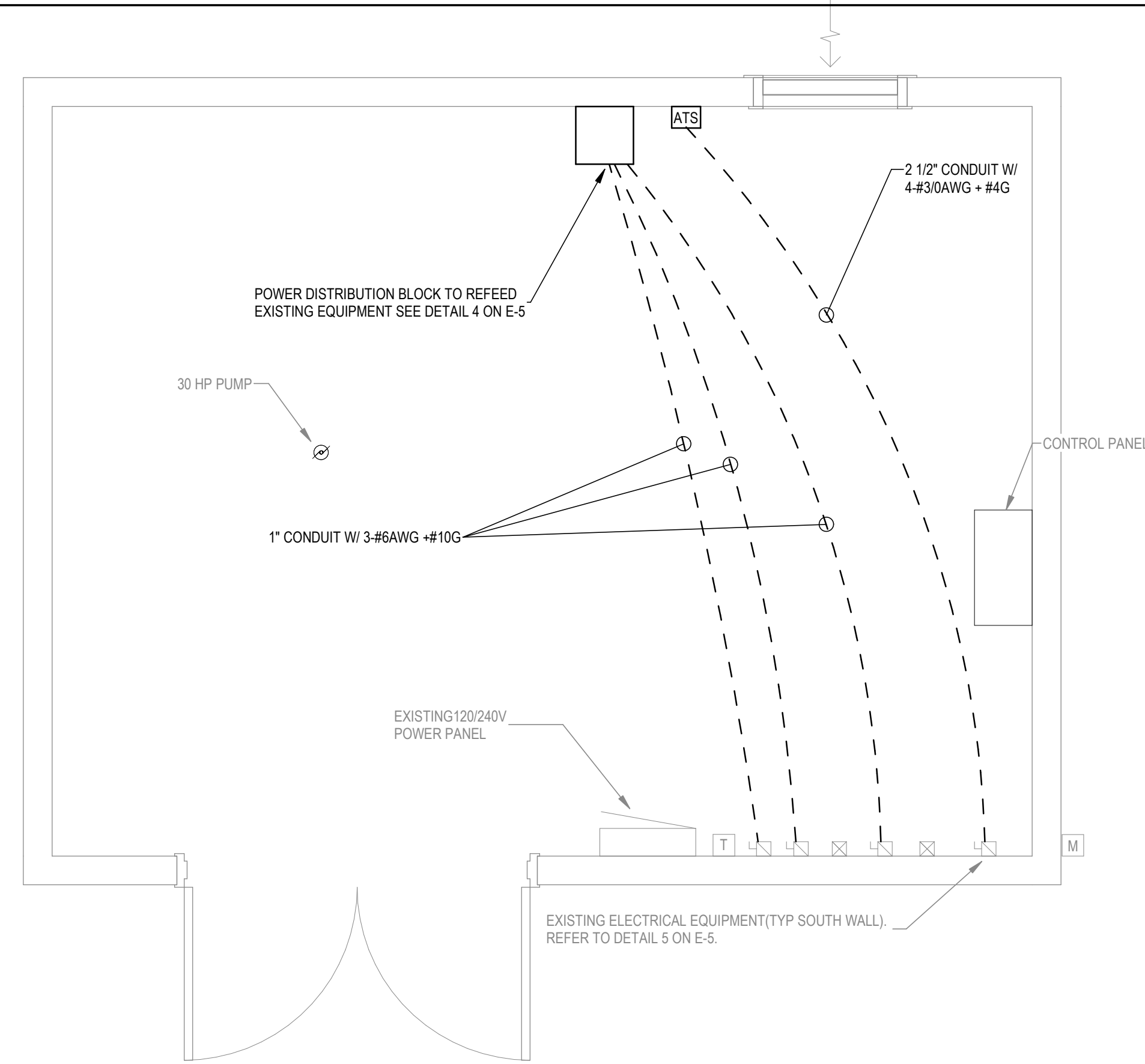


**1** FIRST FLOOR - PALMER 3A BLDG LIGHTING PLAN  
 1/2" = 1'-0"

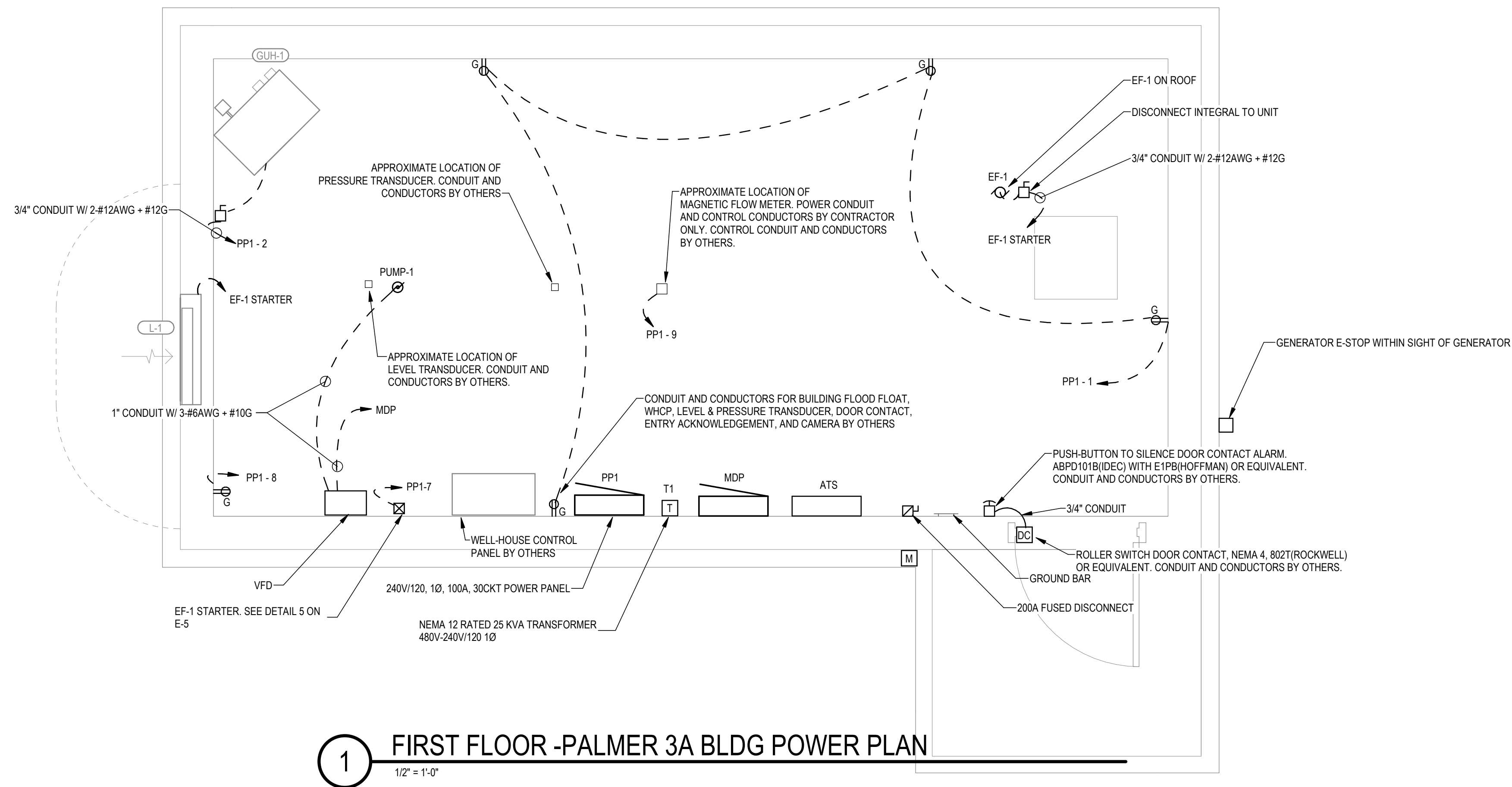


ISSUE:	12/01/2022
ISSUED FOR BID	
REVISIONS:	

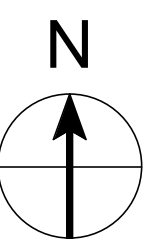
DATE	PROJ NUMBER	ENG ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
12/01/2022	0022-22-0070	SW	AV	SW	SHAWASSEE	OWOSSO
<b>CITY OF OWOSSO</b>						
<b>PALMER 3A WELLHOUSE</b>						
Palmer Street Owosso, MI 48867						
<b>FIRST FLOOR - PALMER 3A BLDG LIGHTING PLAN</b>						



**2** FIRST FLOOR - PALMER 2  
1/2" = 1'-0"



**1** FIRST FLOOR - PALMER 3A BLDG POWER PLAN  
1/2" = 1'-0"



12/01/2022  
ISSUE: ISSUED FOR BID REVISIONS:

DATE: 12/01/2022  
PROJECT NUMBER: 0202-22-0070  
PROJECT: PALMER 3A WELLHOUSE  
CADD: SW  
COUNTY: SHAWASSEE  
MUNICIPALITY: OWOSSO

**CITY OF OWOSSO**  
**PALMER 3A WELLHOUSE**  
Palmer Street  
Owosso, MI 48867  
**FIRST FLOOR - PALMER 2 & 3A BLDG POWER PLAN**



### BRANCH PANEL: MDP

**LOCATION:** VOLTS: 480/277 Wye  
**SUPPLY FROM:** PHASES: 3  
**MOUNTING:** SURFACE WIRES: 4  
**ENCLOSURE:** TYPE 1

**SCCR RATING:** 22K SCCR  
**MAINS TYPE:** MCB  
**MAINS RATING:** 200 A  
**MCB RATING:** 200 A

**NOTES:**  
INTEGRAL SURGE PROTECTION

IDENTIFICATION	WIRE SIZES	POLE	AMP	CKT	A KVA	B KVA	C KVA	A KVA	B KVA	C KVA	AMP	POLE	WIRE SIZES	IDENTIFICATION	
30 HP PUMP	6	3	60	1 11...			2.50				2	50	2	8	T1
				3	11...		2.50				4				SPACE
				5	11...						6		1		SPACE
SPACE	--	3	--	7	--	--	--	--	--	--	8				SPACE
				9	--	--	--	--	--	--	10				SPACE
SPACE	--	3	--	11	--	--	--	--	--	--	12				SPACE
				13	--	--	--	--	--	--	14				SPACE
				15	--	--	--	--	--	--	16				SPACE
				17	--	--	--	--	--	--	18				SPACE
				19	--	--	--	--	--	--	20				SPACE
				21	--	--	--	--	--	--	22				SPACE
				23	--	--	--	--	--	--	24				SPACE
<b>CONNECTED LOAD: (KVA)</b>					14.47	14.47	11.97								

### BRANCH PANEL: PP1

**LOCATION:** VOLTS: 120/240 Single  
**SUPPLY FROM:** PHASES: 1  
**MOUNTING:** SURFACE WIRES: 3  
**ENCLOSURE:** TYPE 1

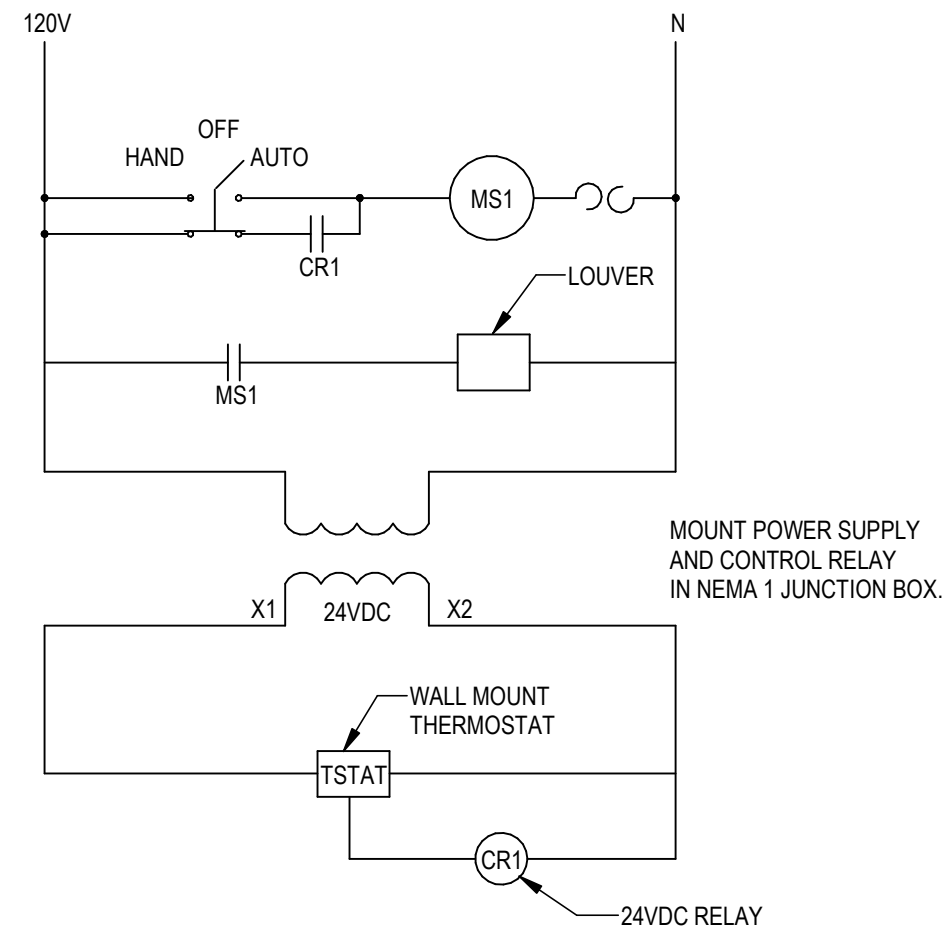
**SCCR RATING:** 10K SCCR  
**MAINS TYPE:** MCB  
**MAINS RATING:** 100 A  
**MCB RATING:** 100 A

**NOTES:**

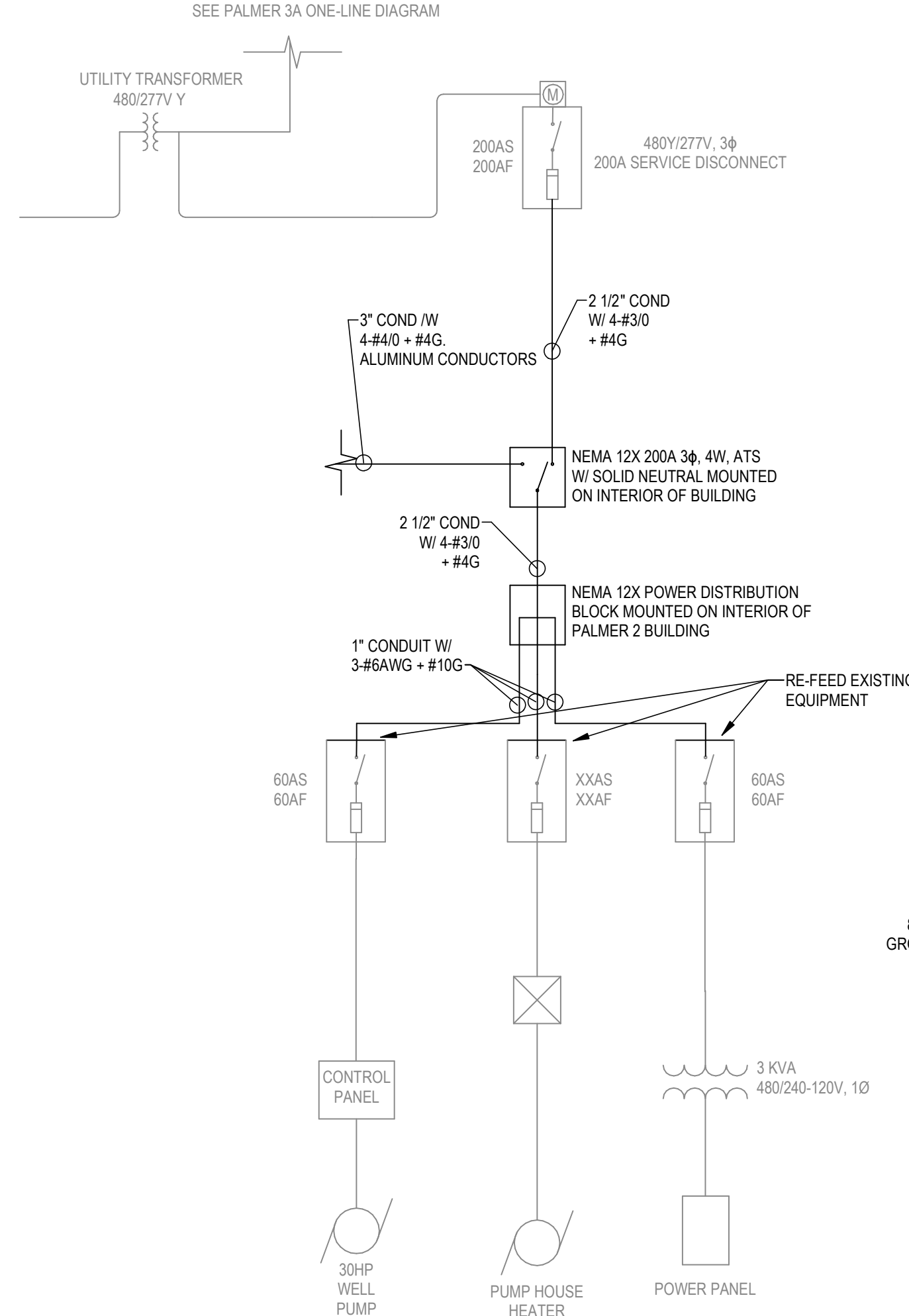
IDENTIFICATION	WIRE SIZES	POLE	AMP	CKT	A KVA	B KVA	A KVA	B KVA	CKT	AMP	POLE	WIRE SIZES	IDENTIFICATION	
INTERIOR RECEPTS	12	1	20	1	0.72	0.29			2	20	1	12	GUH-1	
GEN BLOCK WARMER	12	1	20	3	1.50	1.20			4	20	1	12	GEN BATTERY...	
INTERIOR LIGHTING	12	1	20	5	0.26	0.07			6	20	1	12	EXTERIOR LIGHTING	
EF-1	12	1	20	7	0.86	0.18			8	20	1	12	DH-1	
MAG METER	12	1	20	9	0.50	0.00			10	20	1	--	SPARE	
SPARE	--	1	20	11	0.00	0.00			12	20	1	--	SPARE	
SPARE	--	1	20	13	0.00	0.00			14	20	1	--	SPARE	
SPARE	--	1	20	15	0.00	0.00			16	20	1	--	SPARE	
				17					18				SPARE	
				19					20				SPARE	
				21					22				SPARE	
				23					24				SPARE	
				25					26				SPARE	
				27					28				SPARE	
				29					30				SPARE	
<b>CONNECTED LOAD: (KVA)</b>					1.84	0.00								

### GENERATOR SCHEDULE

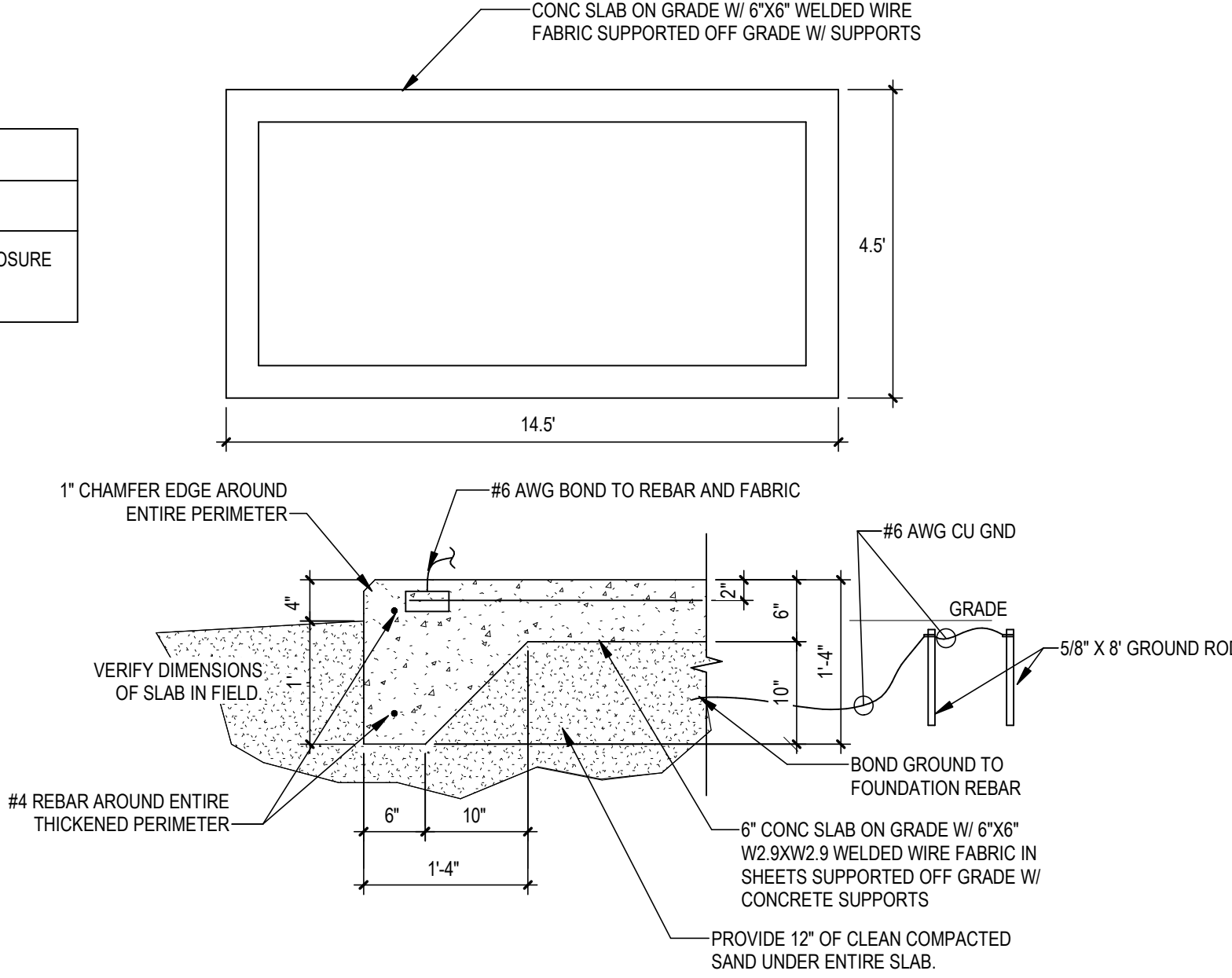
MANUFACTURER	MODEL #	RATING (KW)	FUEL	VOLTAGE	PHASE	COMMENTS
CUMMINS	C150N6	150	NATURAL GAS	480V/277	3Φ	PROVIDE WEATHER PROOF ENCLOSURE AND MUFFLER SILENCER



**5 PALMER 3A EF-1 CONTROL DETAIL**  
N.T.S.



**4 PALMER 2 ONE LINE DIAGRAM**  
N.T.S.

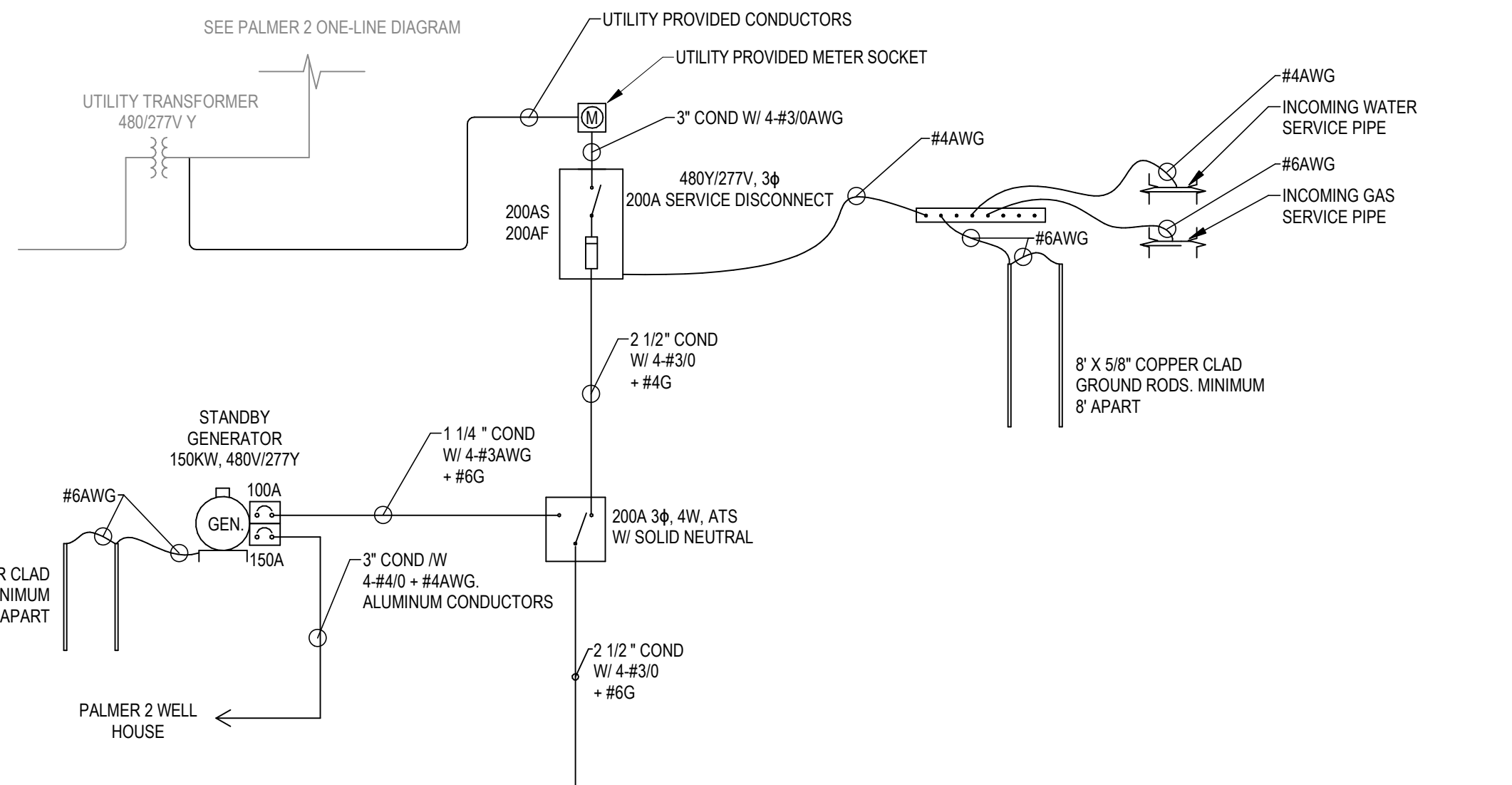


**3 GENERATOR PAD DETAIL**  
N.T.S.

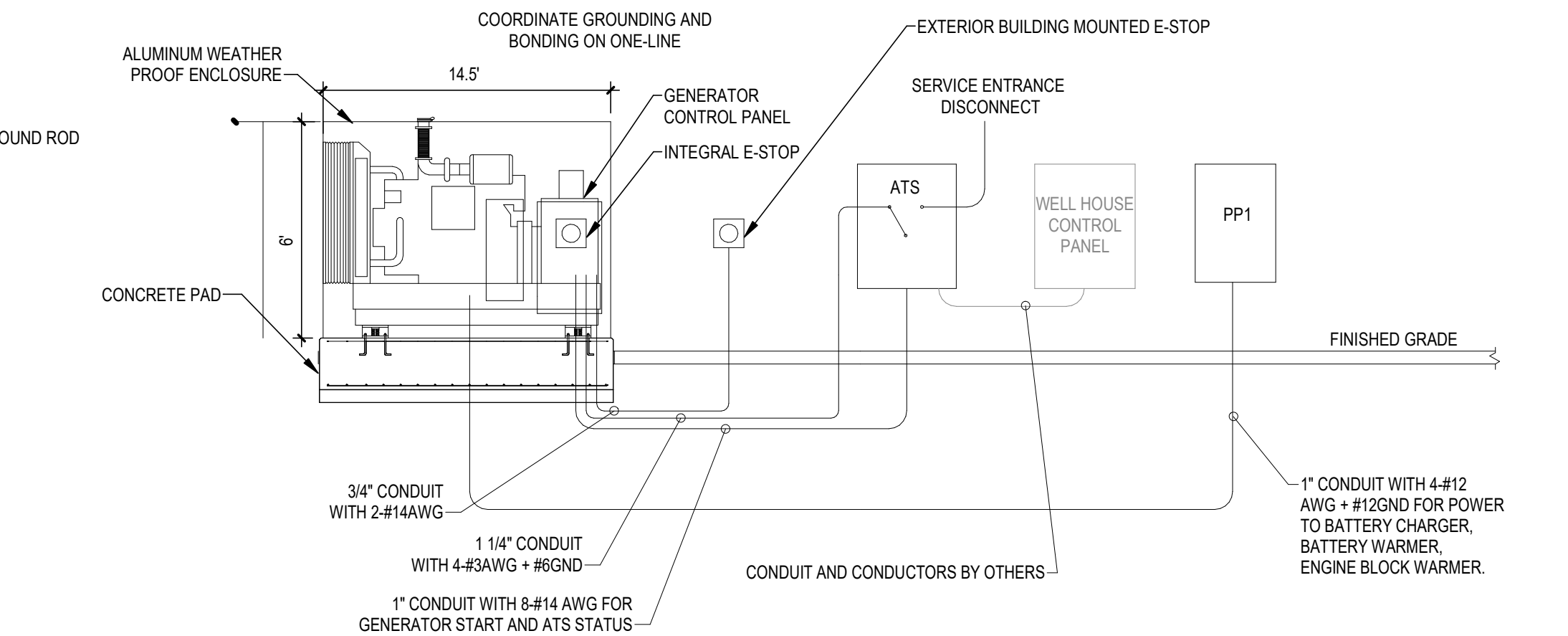
### LIGHTING FIXTURE SCHEDULE

SCHEDULE NOTES:

TYPE	DESCRIPTION	MFR.	CATALOG #	LAMPS	WATTS	NOTES
LP1	POST LIGHT	LUMARK	PRP-P-PA2B-740-U-T4W-MA-BK-SPB1	LED	53	REQUIRES MAST HEAD FOR MOUNTING
SL1	LINEAR PENDANT LIGHTING FIXTURE	METALUX	4SNLED_LDS_30SL_LN_UNV_L840_	LED	23	
WP1	EXTERIOR WALL PACK	LUMARK	XTOR2B-W-PC1	LED	19	



**2 PALMER 3A ONE LINE DIAGRAM**  
N.T.S.



**1 GENERATOR DETAIL**  
N.T.S.

**PRELIMINARY - NOT FOR CONSTRUCTION**

12/01/2022

ISSUE: ISSUED FOR BID REVISIONS:

SHEET

MUNICIPALITY COUNTY CADD PROJ/MGR ENG/ARCH DATE

CITY OF OWOSO PALMER 3A WELLHOUSE

Palmer Street Owosso, MI 48867

ELECTRICAL DETAILS & SCHEDULES

E-5