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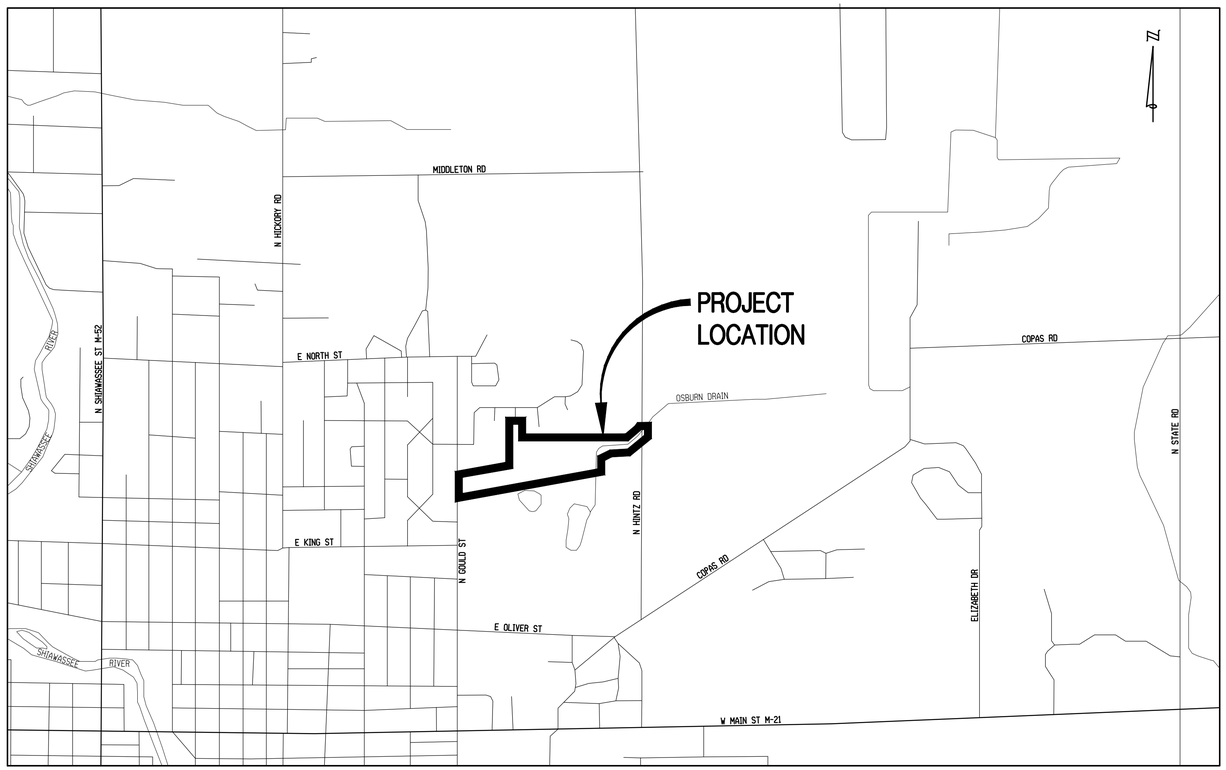
CITY OF OWOSSO

JUNIPER WELL HOUSE DESIGN

SHIAWASSEE COUNTY, MICHIGAN

DWSRF PROJECT NUMBER 7491-01



LOCATION MAP

N.T.S.

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 CONSTRUCTION OF NEW WELL HOUSE AT EXISTING JUNIPER 1 WELL LOCATION, CHAIN-LINK WITH BARBED WIRE SECURITY FENCING, GRAVEL ACCESS DRIVE, INSTALL NEW GAS AND ELECTRIC SERVICES, INSTALL BACK-UP GENERATOR. 1,544 FEET OF RAW WATER MAIN. CONSISTING OF 10 FEET OF 12" OF CEMENT LINED DUCTILE IRON WATER MAIN OPEN-CUT, 1460 FEET OF 12" PVC (C900) WATER MAIN DIRECTIONAL DRILLED AND 74 FEET OF 12" PVC (C909) OPEN-CUT WATER MAIN.

THESE PLANS WERE PREPARED FOR THE CITY OF OWOSSO BY:

OHM

Advancing Communities

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

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: STATE OF MICHIGAN · ERIC RYONEY SPITLER · ENGINEER · No. 6201045688 · LICENSED PROFESSIONAL ENGINEER	SEAL: STATE OF MICHIGAN · LOUIS M. MEYETTE · ENGINEER · No. 6201054591 · LICENSED PROFESSIONAL ENGINEER · 0020-22-0080 · 12/1/2022	SEAL: STATE OF MICHIGAN · TRACIE M. WILLIAMS · ENGINEER · No. 49957 · LICENSED PROFESSIONAL ENGINEER · 12/1/2022 · 0020-22-0080	SEAL: STATE OF MICHIGAN · MATTHEW MARTIN KENNEDY · ENGINEER · No. 6201063627 · LICENSED PROFESSIONAL ENGINEER · 12/1/2022 · 0020-22-0070 · 0020-22-0080	SEAL: STATE OF MICHIGAN · MICHAEL P. SPURBECK · ENGINEER · No. 6201030659 · LICENSED PROFESSIONAL ENGINEER · December 1, 2022

ISSUE: ISSUED FOR BID	12/01/2022
REVISIONS	
PROJECT NO.	SHEET NO.
0020220080	1 OF 27

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

ELECTRIC

CONSUMERS ENERGY
TRACY MAHAR
1801 W. MAIN STREET
OWOSSO, MI 48867
(989) 204-9018
pobox3PTY_LVDEZ6@cmsenergy.com

FIBER

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

GAS

CONSUMERS ENERGY
ADAM BERTRAM
530 W. WILLOW STREET
LANSING, MI 48906
(517) 614-8570
Adam.Bertram@cmsenergy.com

CABLE TV

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

STORM/COUNTY DRAIN

SHIAWASSEE COUNTY DRAIN COMMISSION
TONY NEWMAN
149 E. CORUNNA AVENUE L-1
CORUNNA, MI 48817
(989) 743-2398
drains@shiawassee.net

WATER AND SEWER

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

ROAD

CITY OF OWOSSO
CLAYTON WEHNER, PE
301 WEST MAIN STREET
OWOSSO, MI 48867
(989) 725-0551
Clayton.Wehner@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@shiawasseechd.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 HOLDIDAYS. 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

1. REMOVALS SHALL BE DONE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. 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.
3. SAW CUTTING DEPTH SHALL BE ADEQUATE TO PREVENT SPALLING, CHIPPING, OR DAMAGE TO EXISTING PAVEMENT EDGES LEFT IN PLACE AS DIRECTED.
4. 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.
5. 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.
6. 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

1. 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.
2. AGGREGATE BASE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH SECTION 302 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

CONCRETE CONSTRUCTION

1. CONCRETE USED FOR CURB AND SIDEWALK SHALL MEET THE REQUIREMENTS OF SECTION 1004 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. CONCRETE PAVEMENT CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH SECTION 602 AND 1004 OF THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. CONCRETE SIDEWALKS SHALL BE CONSTRUCTED ACCORDING TO MDOT STANDARD DETAIL R-29 SERIES.
4. 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.
5. PROPOSED SIDEWALK CUT JOINTS SHALL BE CONSTRUCTED TO DIVIDE THE SIDEWALK INTO APPROXIMATELY 25 SQUARE FOOT AREAS OR AS DIRECTED BY THE ENGINEER.
6. ALL SIDEWALKS AND BARRIER FREE RAMPS SHALL BE CONSTRUCTED WITH A MAXIMUM 1:48 CROSS-SLOPE AND A MAXIMUM 1:12 LONGITUDINAL SLOPE.
7. ALL SIDEWALKS EXCEEDING THE MAXIMUM LONGITUDINAL SLOPE SHALL BE PROVIDED WITH HAND RAILS ON BOTH SIDES AS DIRECTED BY THE ENGINEER.
8. 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

1. THE CONTRACTOR SHALL RESTORE ALL DISTRUBED AREAS UPON COMPLETION OF THE PROJECT.
2. 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.
3. ALL PERMANENT SLOPES STEEPER THAN 4:1 SHALL BE STABILIZED USING MULCH BLANKETS AS LISTED ON THE PLANS.
4. CONTRACTOR SHALL PLACE 3" OF TOPSOIL, SEED AND MULCH AS INDICATED ON ALL DISTURBED AREAS NOT UNDER PAVEMENT OR OTHERWISE LABELED.
5. 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:

1. 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.
2. 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.
3. 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.
4. 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).
  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.

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

ISSUE	REVISIONS
ISSUED FOR BID	12/01/2022

DATE	PROJ NUMBER	ENGINEER	PROJ MGR	CADD	COUNTY	MUNICIPALITY
####	0022220080	ES	AV	KB	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN

NOTES

SHEET C-2

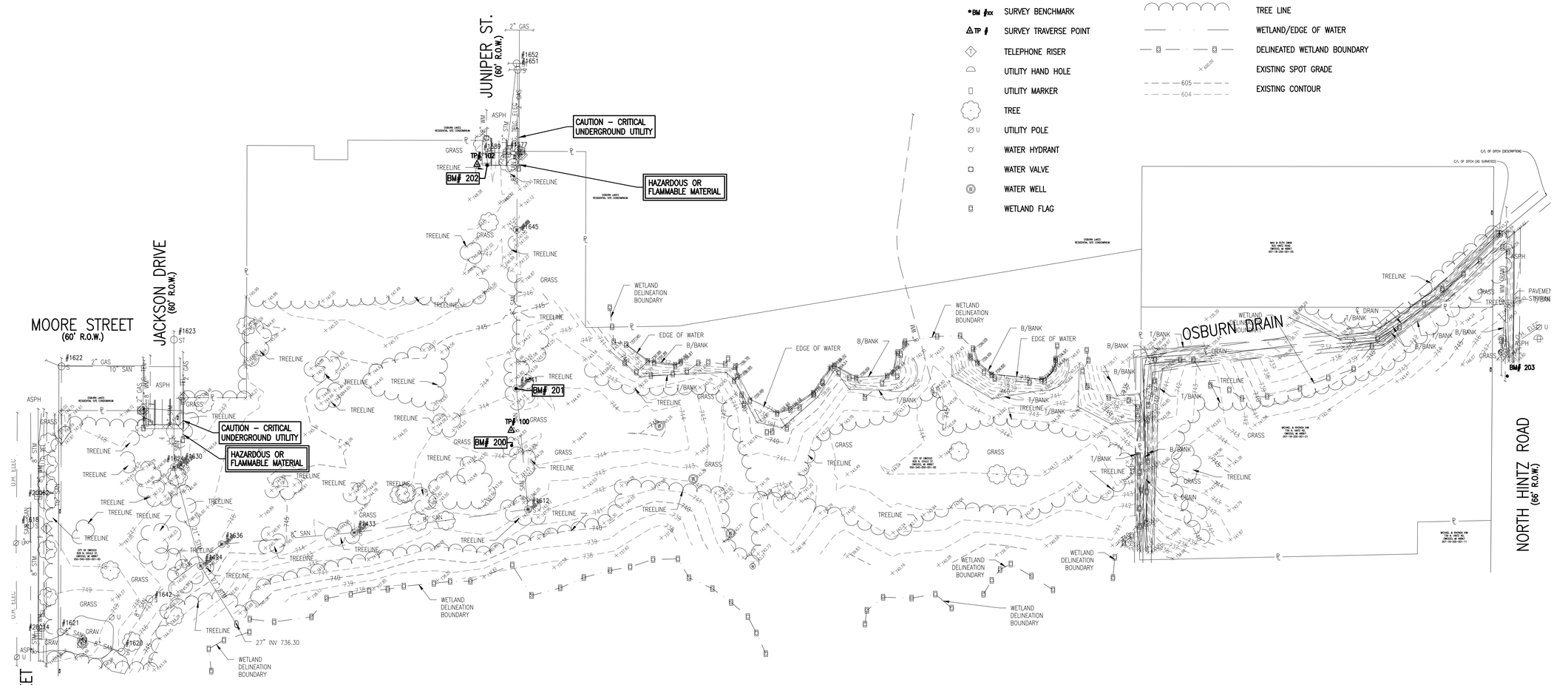
JOB BENCHMARK # 200 SET COTTON SPINDLE NORTH FACE OF 8" DECIDUOUS TREE, LOCATED 500' +/- SOUTH OF JUNIPER ST ELEV 746.07
JOB BENCHMARK # 201 CHISELED X ON WEST EDGE OF SANITARY MANHOLE CASTING 400' +/- SOUTH OF JUNIPER ST ELEV 744.47
JOB BENCHMARK # 202 CHISELED X IN TOP OF SW FLANGE BOLT OF FIRE HYDRANT LOCATED AT THE END OF JUNIPER ST ELEV 750.30
JOB BENCHMARK # 203 CHISELED SQUARE ON TOP OF NORTH END OF 12" CULVERT ELEV 749.15

TRAVERSE POINT # 100 N 549761.645 E 13180090.62 ELEV 744.66
TRAVERSE POINT # 102 N 550236.16 E 13180029.72 ELEV 748.50

LEGEND - EXISTING

GAS RISER		ELEC	ELECTRICAL *
GAS VENT		CABLE/TEL	CABLE/TELEPHONE *
ELECTRICAL METER		*OH = OVERHEAD , UG = UNDERGROUND	
ELECTRICAL TRANSPAD		GAS	GAS \ OIL
LIGHT POLE		12" WM	WATER MAIN/SERVICE
GUY ANCHOR		12" WM (RAW)	RAW WATER MAIN
MONITORING WELL		12" SAN	SANITARY SEWER
PROPERTY LINE		12" STM	STORM SEWER
SIGN		ROW	ROW
STORM CULVERT END			CENTERLINE
SQUARE STORM CATCHBASIN			FENCE
ST STORM MANHOLE		PL	PROPERTY LINE
*BM #xx SURVEY BENCHMARK			TREE LINE
TP # SURVEY TRAVERSE POINT			WETLAND/EDGE OF WATER
TELEPHONE RISER			DELINEATED WETLAND BOUNDARY
UTILITY HAND HOLE		605	EXISTING SPOT GRADE
UTILITY MARKER		604	EXISTING CONTOUR
TREE			
U UTILITY POLE			
WATER HYDRANT			
WATER VALVE			
WATER WELL			
WETLAND FLAG			

GRAPHIC SCALE: HALF 200 feet, FULL 100 feet
0 50 100 200 300



NOTES:

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

Know what's below. Call before you dig.

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

ISSUE	DATE
ISSUED FOR BID	12/01/2022

REVISIONS:
- - - - - -

DATE	PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
####	020220080	ES	AV	KB	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
EXISTING CONDITIONS

SHEET C-3

DRAWING PATH: P:\0000_0100\020220080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Topo\220080SUR.dwg Dec 01, 2022 - 11:22am

JOB BENCHMARK # 200 SET COTTON SPINDLE NORTH FACE OF 8" DECIDUOUS TREE, LOCATED 500' +/- SOUTH OF JUNIPER ST ELEV 746.07
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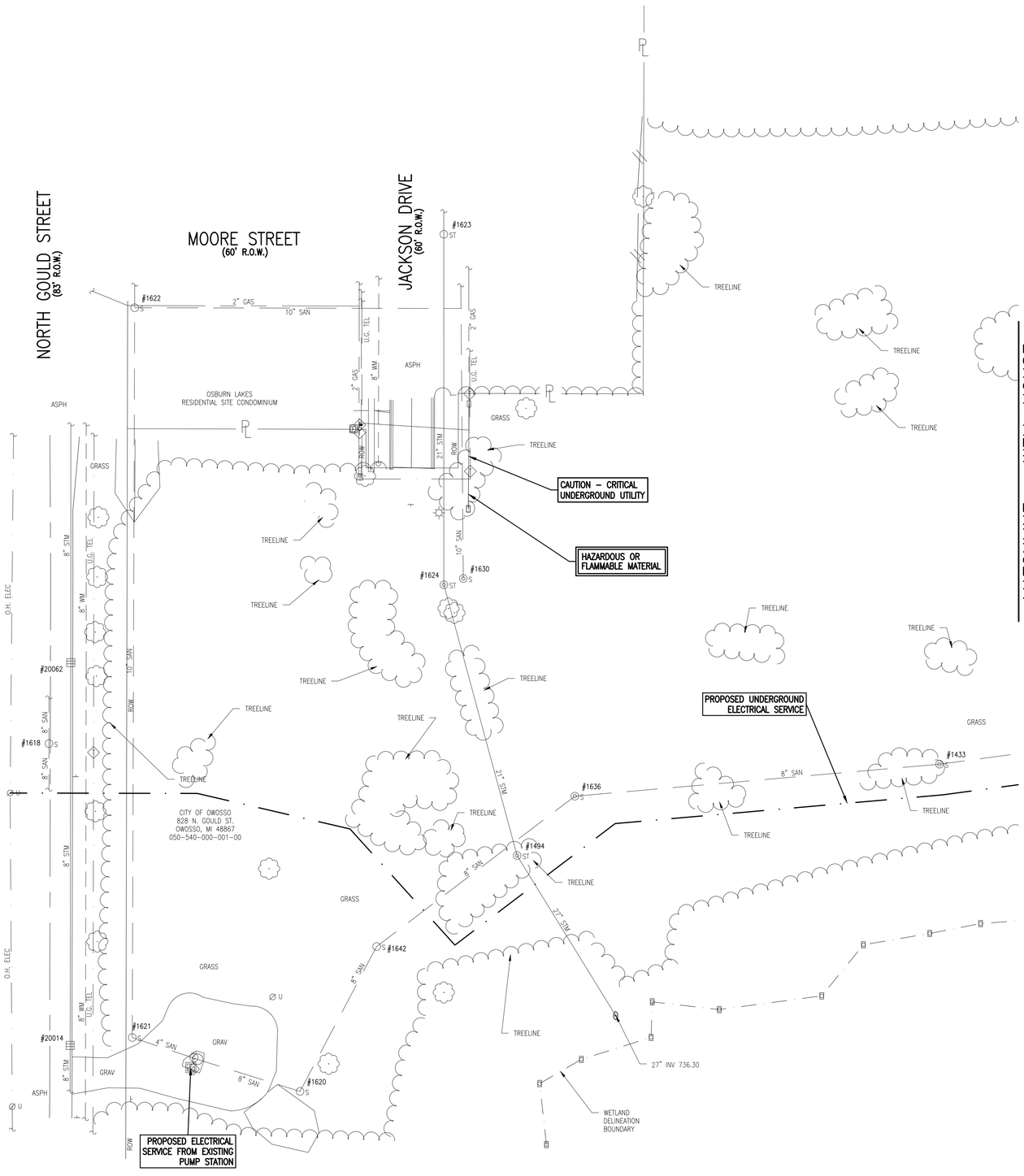

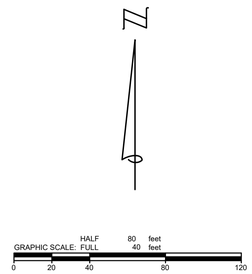

Know what's **below.**
Call before you dig.

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201 E Ellsworth St, Unit 100
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ISSUE	REVISIONS	
BID	ISSUED FOR BID	12/01/2022

DATE	PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
####	003222080	ES	AV	KB	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN

SITE LAYOUT PLAN - WEST

SHEET C-4

DRAWING PATH: P:\0000_0100\0020220080_Juniper_1 Wellhouse_Design_Bid\Drawings\Civil\Plans_Const\220080STE.dwg Dec 01, 2022 - 11:22am

JOB BENCHMARK # 200
SET COTTON SPINDLE NORTH FACE OF 8" DECIDUOUS TREE, LOCATED 500' +/- SOUTH OF JUNIPER ST
ELEV 746.07

JOB BENCHMARK # 201
CHISELED X ON WEST EDGE OF SANITARY MANHOLE CASTING 400' +/- SOUTH OF JUNIPER ST
ELEV 744.47

JOB BENCHMARK # 202
CHISELED X IN TOP OF SW FLANGE BOLT OF FIRE HYDRANT LOCATED AT THE END OF JUNIPER ST
ELEV 750.30

JOB BENCHMARK # 203
CHISELED SQUARE ON TOP OF NORTH END OF 12" CULVERT
ELEV 749.15

TRAVERSE POINT # 100
N 549761.645
E 13180090.62 ELEV 744.66

TRAVERSE POINT # 102
N 550236.16
E 13180029.72 ELEV 748.50

JUNIPER ST. (60' R.O.W.)

OSBURN LAKES RESIDENTIAL SITE CONDOMINIUM

CAUTION – CRITICAL UNDERGROUND UTILITY

HAZARDOUS OR FLAMMABLE MATERIAL

PROPOSED GAS SERVICE CONNECTION TO EXISTING

PROPOSED 24' ACCESS GATE

BM# 202

TP# 102

TP# 100

BM# 200

BM# 201

#1589

#1577

#1645

#1341

#1612

20.0' GRAVEL DRIVE

PROPOSED GAS SERVICE FROM CONSUMERS ENERGY

PROPOSED 3" GAS SERVICE TO GENERATOR

PROPOSED 4" DRAIN OUTLET

PROPOSED SPLASH PAD AND RIP RAP

PROPOSED WELL HOUSE

PROPOSED CONCRETE STOOP SEE SHEET S-2 FOR DETAIL

PROPOSED 24' DOUBLE SWING GATE

PROPOSED GENERATOR PAD SEE SHEET E-6 FOR DETAIL

APPROXIMATE LOCATION OF COMMUNICATION POLE COORDINATE WITH SCADA DESIGN (BY OTHERS)

PROPOSED BOLLARD (TYPICAL OF 2)

PROPOSED 8' CHAIN LINK FENCE WITH BARBED WIRE

PROPOSED UNDERGROUND ELECTRICAL SERVICE

APPROXIMATE 10'X20' BORE PIT LOCATION, TYP.

PROPOSED 12" WATER MAIN (RAW)

WETLAND DELINEATION BOUNDARY

EDGE OF WATER

B/BANK

T/BANK

CITY OF OWOSSO
828 N. GOULD ST.
OWOSSO, MI 48867
050-540-000-001-00

MATCHLINE – WEST

MATCHLINE – EAST

LEGEND

- PROPOSED ACCESS GATE
- PROPOSED 8' CHAIN LINK FENCE WITH BARBED WIRE
- PROPOSED DRAIN PIPE
- PROPOSED UNDERGROUND ELECTRICAL SERVICE
- 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

GRAPHIC SCALE: HALF 80 feet, FULL 40 feet
0 20 40 80 120

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CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
SITE LAYOUT PLAN - WELL HOUSE

SHEET C-5

DRAWING PATH: P:\0000_0100\002220080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Plans_Const\220080SITE.dwg Dec 01, 2022 - 11:23am

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TRAVERSE POINT # 100 N 549761.645 E 13180090.62 ELEV 744.66
TRAVERSE POINT # 102 N 550236.16 E 13180029.72 ELEV 748.50

N

GRAPHIC SCALE: FULL 0 20 40 80 120 feet; HALF 0 20 40 feet

OSBURN LAKES
RESIDENTIAL SITE CONDOMINIUM

MAX & RUTH SWAN
825 HINTZ ROAD
OWOSSO, MI 48867
007-18-200-001-05

MATCHLINE - WELL HOUSE

B/BANK
EDGE OF WATER
T/BANK
TREELINE
PROPOSED 12" WATER MAIN (RAW)
GRASS
CITY OF OWOSSO
828 N. GOULD ST.
OWOSSO, MI 48867
050-540-000-001-00
WETLAND DELINEATION BOUNDARY
℄ DRAIN
OSBURN DRAIN
WETLAND DELINEATION BOUNDARY
APPROXIMATE 10'X20' BORE PIT LOCATION, TYP.
MICHAEL & RHONDA IHM
739 N. HINTZ RD.
OWOSSO, MI 48867
007-18-200-001-21
MICHAEL & RHONDA IHM
739 N. HINTZ RD.
OWOSSO, MI 48867
007-18-200-001-11
C/L OF DITCH (DESCRIPTION)
C/L OF DITCH (AS SURVEYED)
ROW
ASPH
15" WM (RAW)
PAVEMENT STRIPING
ISO CV&W
PROPOSED 12" CULVERT
PROPOSED 15'X30' GRAVEL ACCESS DRIVE
O.H. ELEC.
PROPOSED 20.0' WATER MAIN EASEMENT
BM# 203
NORTH HINTZ ROAD
(66' R.O.W.)

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####	0202220080	ES	AV	KB	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
SITE LAYOUT PLAN - EAST

SHEET C-6

DRAWING PATH: P:\0000_0100\0202220080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Plans_Const\220080ISTE.dwg Dec 01, 2022 - 11:23am

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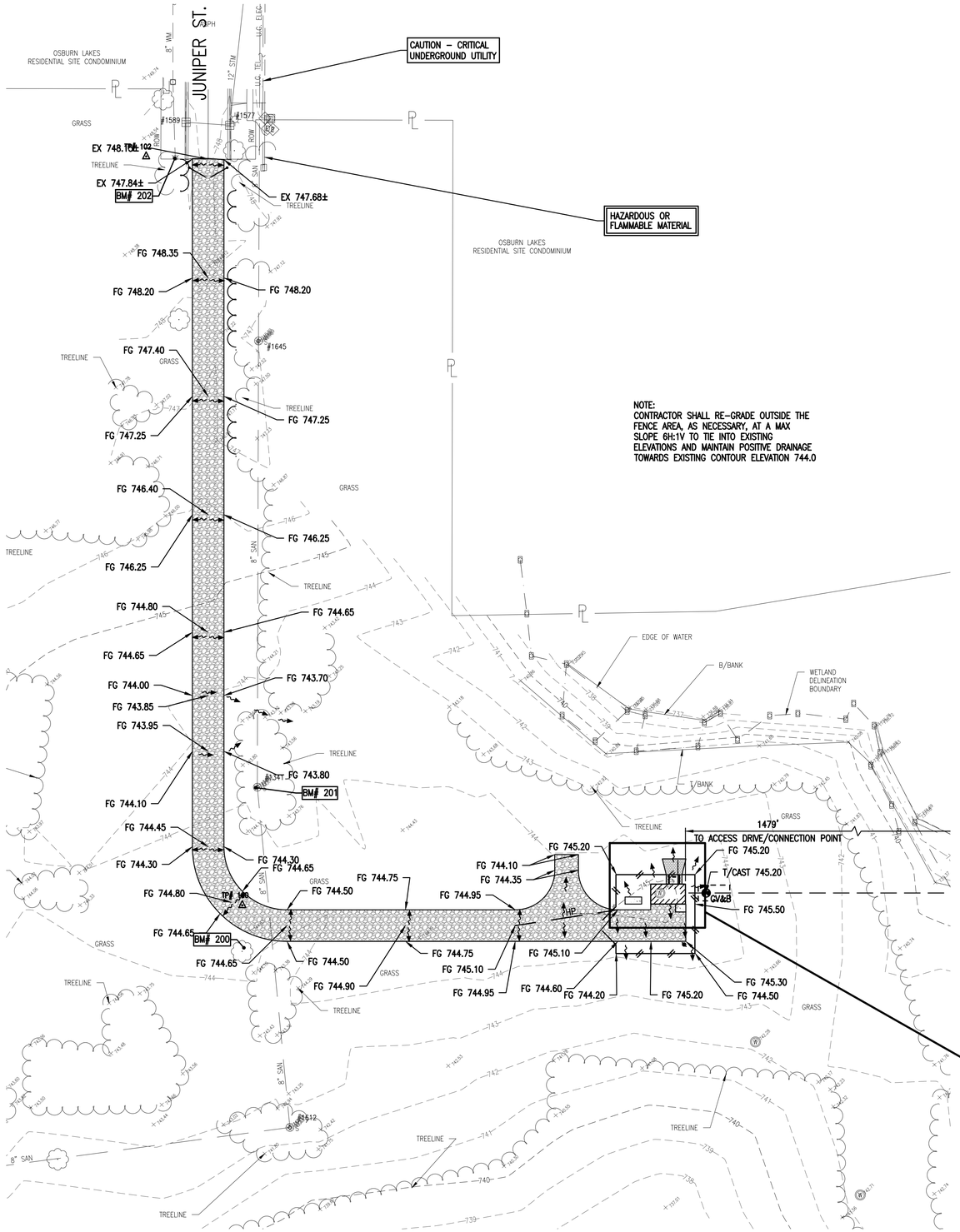
TRAVERSE POINT # 102 N 550236.16 E 13180029.72 ELEV 748.50



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
T/WALL	TOP OF WALL

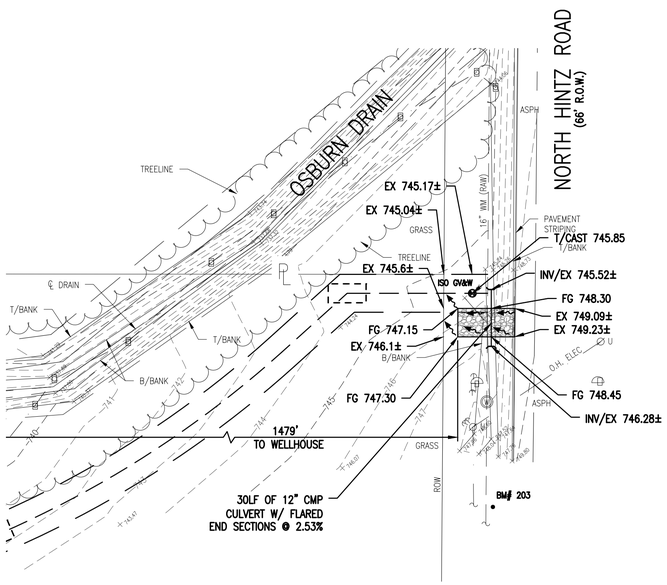
FG 749.25 PROPOSED SPOT GRADE

HP PROPOSED HIGH POINT/GRADE BREAK

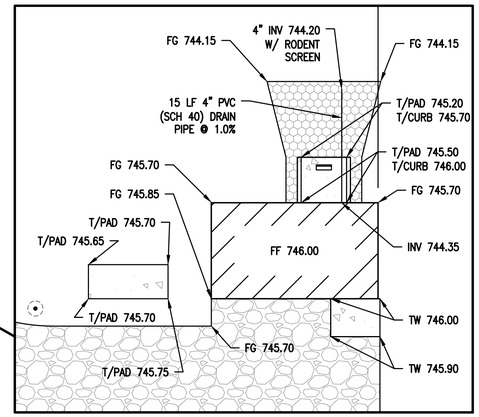
PROPOSED DRAINAGE FLOW ARROW

665 EXISTING CONTOUR
664

GRAPHIC SCALE: FULL HALF 80 feet 40 feet
0 20 40 80 120



ACCESS DRIVE AT N. HINTZ ROAD



BUILDING GRADING DETAIL
SCALE: 1" = 10'

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CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
SITE GRADING PLAN
WELL HOUSE AND EAST CONNECTION

SHEET C-7

DRAWING PATH: P:\0000_0100\0202220080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Grading\220080GRD.dwg Dec 01, 2022 - 11:23am

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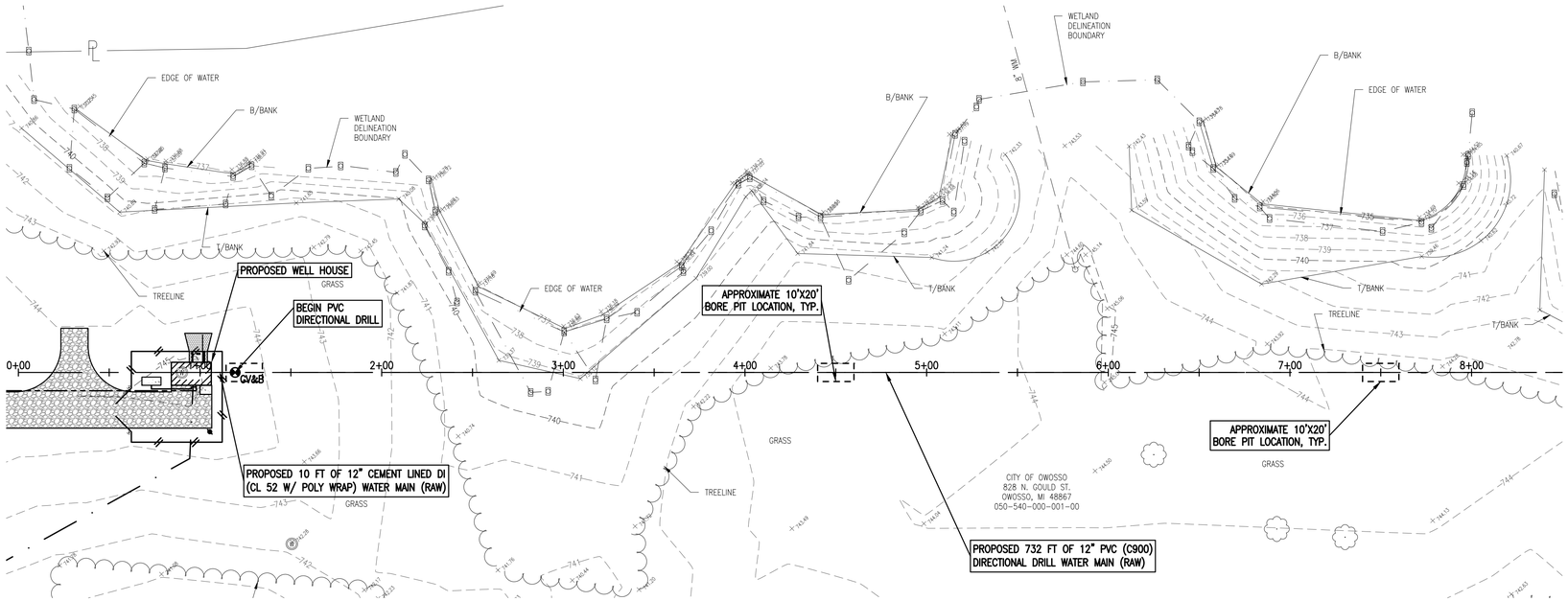
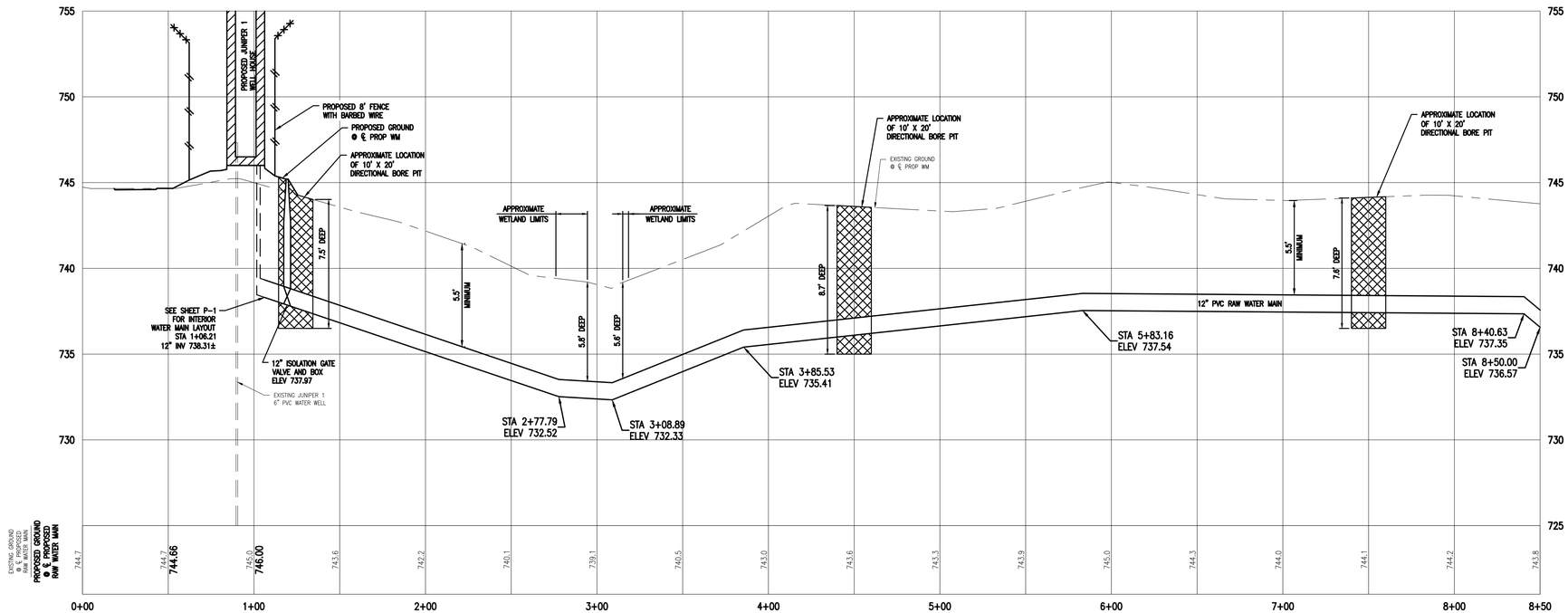
N 549761.645
E 13180090.62 ELEV 744.66

TRAVERSE POINT # 102
N 550236.16
E 13180029.72 ELEV 748.50





WATER MAIN APPURTENANCES			
ITEM	STATION	OFFSET	T/BOX OR BURY LINE
CONNECT TO JUNIPER 1 WELL HOUSE PIPING	1+08.33		
12" ISOLATION GV&B	1+18.34		745.20

N

GRAPHIC SCALE: FULL HALF
0 20 40 80 120
40 feet 80 feet

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CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
RAW WATER MAIN PLAN AND PROFILE

SHEET C-8

DRAWING PATH: P:\0000_0100\0022020080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Profiles\220080PRF.dwg Dec 01, 2022 - 11:23am

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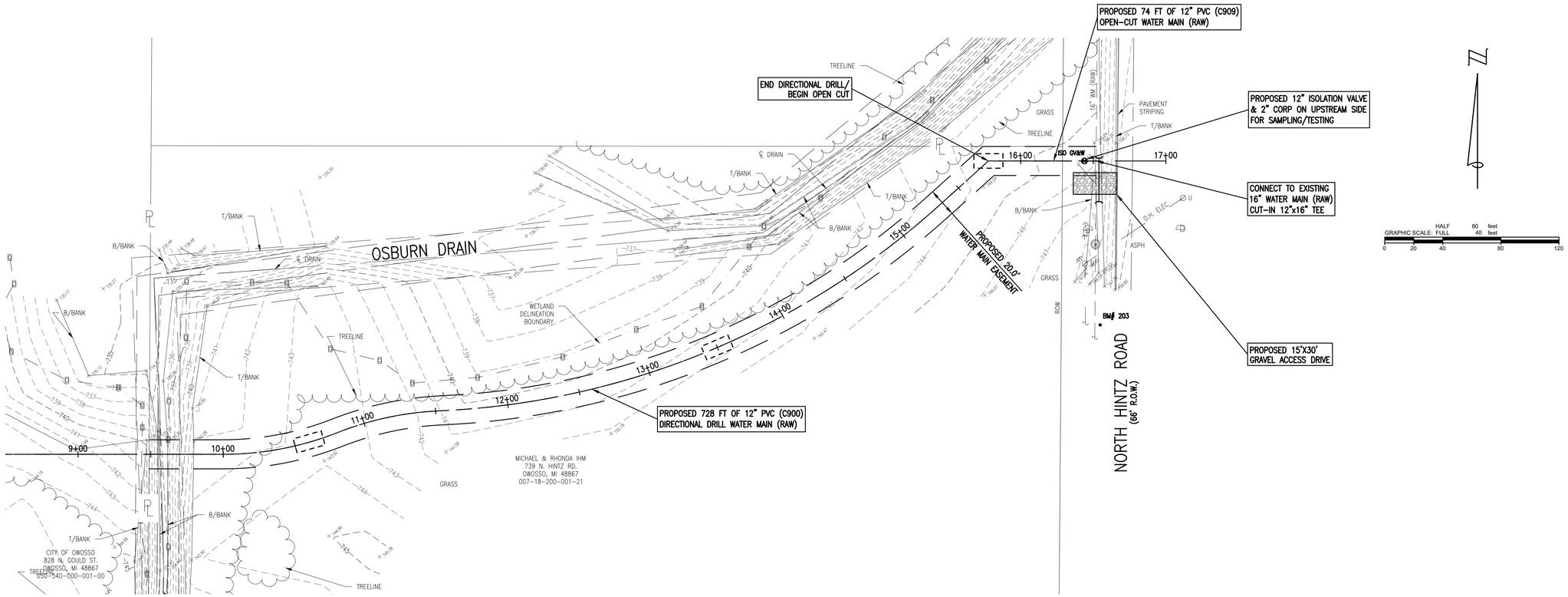

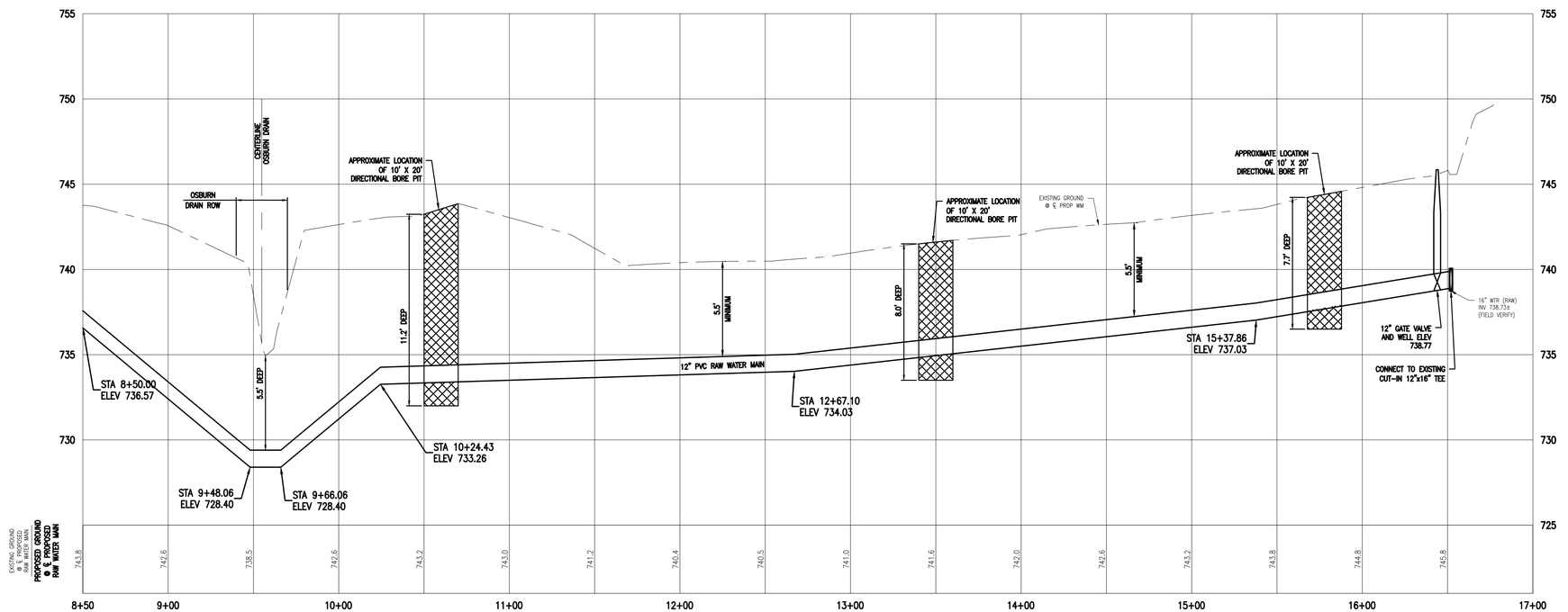

WATER MAIN APPURTENANCES			
ITEM	STATION	OFFSET	T/BOX OR BURY LINE
12" 45° HOR. BEND	15+77.81		
12" GV&B	16+43.90		745.85
CONNECT TO EXISTING CUT-IN 12"x16" TEE	16+51.96		

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CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
RAW WATER MAIN PLAN AND PROFILE

SHEET C-9

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SESC GENERAL NOTES

1. SOIL CONDITIONS:
   - CvraaB– CONOVER LOAM, 0 TO 4 PERCENT SLOPES
   - MoA– MACOMB LOAM, 0 TO 2 PERCENT SLOPES
   - BrooaA– BROOKSTONE LOAM, DENSE SUBSTRATUM, 0 TO 1 PERCENT SLOPES
   - MbB – MACOMB SANDY LOAM, 2 TO 6 PERCENT SLOPES

   SOURCE: websoilsurvey.nrcs.usda.gov

2. TOTAL AREA OF DISTURBED EARTH APPROXIMATELY 1.6 ACRES.

3. NEAREST OPEN WATER IS THE OSBURN DRAIN ADJACENT TO WATER MAIN WORK ON THE SITE.

MAINTENANCE NOTES

1. 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.

2. DUST CONTROL
   TO PREVENT DUST FROM BECOMING A PUBLIC NUISANCE AND CAUSING OFF-SITE DAMAGES, DUST CONTROL SHOULD BE ONGOING DURING EARTH CHANGE ACTIVITIES.

3. 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.

4. 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 LADEN. THE INLET GEOTEXTILE FILTER SHALL BE REMOVED AFTER THE ESTABLISHMENT OF FINAL GRADE AND PRIOR TO PAVEMENT INSTALLATION.

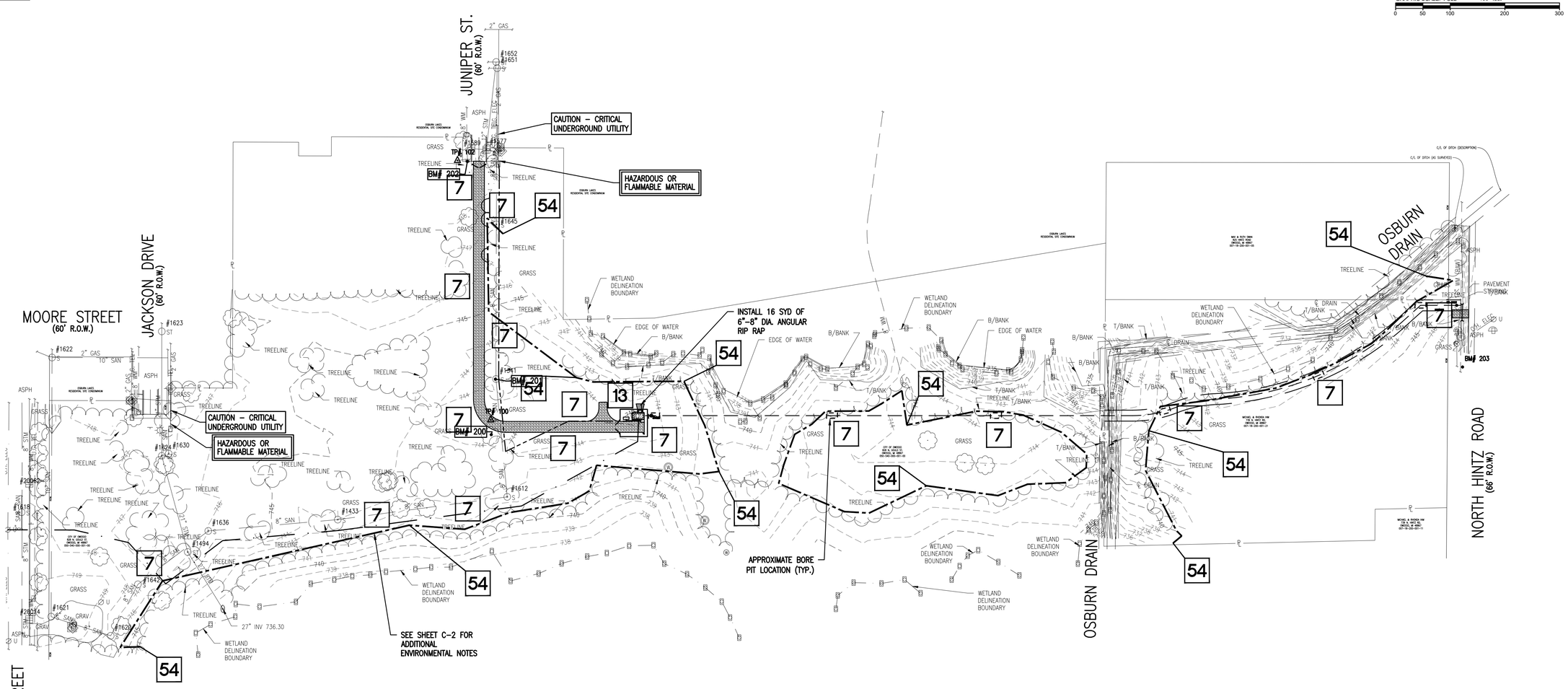
5. SEEDING
   NEWLY SEEDED AREAS NEED TO BE INSPECTED FREQUENTLY FOR THE FIRST FEW MONTHS TO ENSURE THE GRASS IS GROWING. IF THE SEEDED AREA IS DAMAGED DUE TO RUNOFF, ADDITIONAL STORMWATER MEASURES MAY BE NEEDED. SPOT SEEDED CAN BE DONE ON SMALL AREAS TO FILL IN BARE SPOTS WHERE GRASS DIDN'T GROW PROPERLY.

7. 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.

8. 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

1. 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 SHIAWASSEE COUNTY REQUIREMENTS.
2. IMPLEMENT TEMPORARY SOIL EROSION CONTROL MEASURES, INCLUDING SILT FENCE INSTALLATION.
3. STRIP TOPSOIL AND STOCKPILE.
4. BEGIN BUILDING CONSTRUCTION.
5. INSTALL UTILITIES.
6. INSTALL DRIVE AND FENCING.
7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL HAVE PERMANENT STABILIZATION COMPLETED WITHIN 5 DAYS OF FINAL GRADE.
8. DAILY, OR AS REQUIRED, CONSTRUCT AND MAINTAIN TEMPORARY BERMS, DRAINS, SILT FENCE, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
9. FINISH GRADE, REDISTRIBUTE TOPSOIL AND ESTABLISH VEGETATION ON ALL DISTURBED GROUND AREAS.
10. CLEAN PAVEMENT AND STORM SEWERS OF ALL SEDIMENT.
11. REMOVE SOIL EROSION CONTROL MEASURES AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL SOIL EROSION CONTROL MEASURES ARE INSTALLED AND MAINTAINED.



GRAPHIC SCALE: FULL 0 50 100 200 300 — HALF 0 50 100 feet

SOIL EROSION AND SEDIMENTATION CONTROL MAINTENANCE SCHEDULE								
TASK	FREQUENCY	RIPRAP	SILT FENCE	INLET FILTERS	STORM SEWER	CB SUMPS	VEGETATION
INSPECT FOR SEDIMENT ACCUMULATION	WEEKLY		X	X	X	X	
REMOVE ACCUMULATED SEDIMENT	AS NEEDED		X	X	X	X	
INSPECT FOR FLOATABLES AND DEBRIS	WEEKLY				X	X	
REMOVE FLOATABLES AND DEBRIS	AS NEEDED				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						

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

7	Hydro seeding Mulch	Effective on large areas. Mulch tacking agent used to provide immediate protection until grass is rooted. Should include prepared topsoil bed. PERMANENT MEASURE
13	Riprap, Rubble, Gabions	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
54	Silt Fence	Filters and detains runoff. Shown on plan as TEMPORARY MEASURE

Know what's **below.** **Call** before you dig.

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Midland, MI 48640
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12/01/2022	

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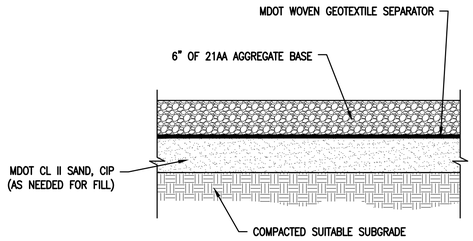
####	0220220080	ES	AV	KB	SHIAWASSEE	OWOSSO

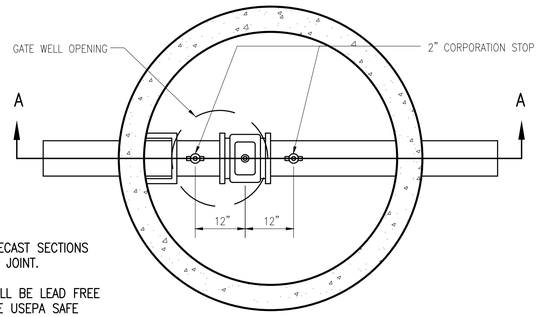
CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
SOIL EROSION AND SEDIMENTAION CONTROL PLAN

SHEET C-10

DRAWING PATH: P:\0000_0100\0220220080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Plans_Const\220080SEC.dwg Dec 01, 2022 - 11:23am



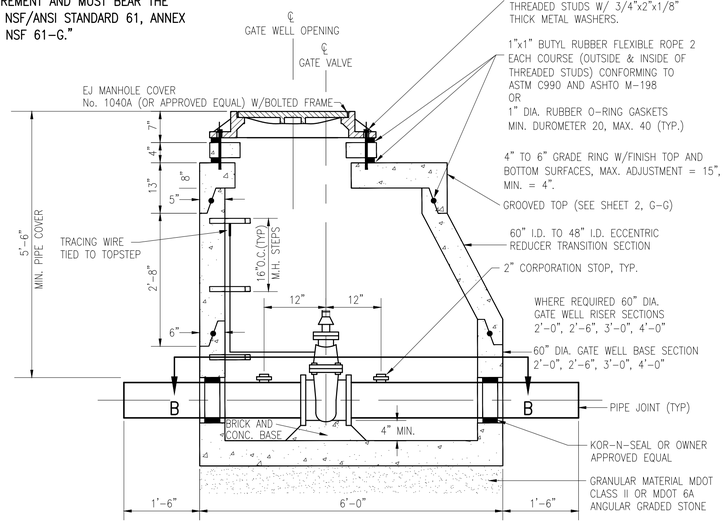
AGGREGATE DRIVEWAY CROSS SECTION
NO SCALE



NOTE:
ALL GATE WELL PRECAST SECTIONS SHALL BE PREMIUM JOINT.

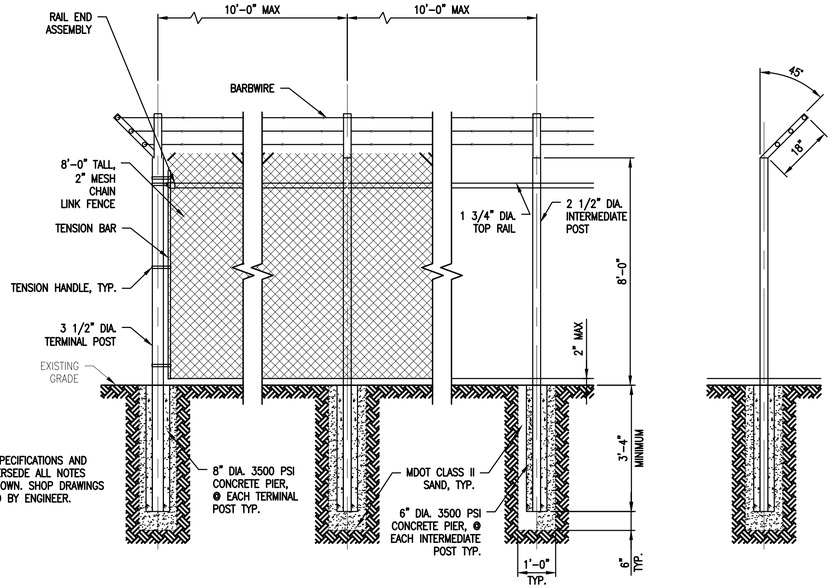
ALL MATERIALS SHALL BE LEAD FREE AS DEFINED BY THE USEPA SAFE DRINKING WATER ACT, IN THAT; "ALL PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES THAT ARE USED FOR POTABLE WATER MUST COMPLY WITH THE LEAD FREE REQUIREMENT AND MUST BEAR THE MARK NSF/ANSI STANDARD 61, ANNEX G OR NSF 61-G."

12" GATE VALVE AND WELL
(PLAN VIEW B-B)



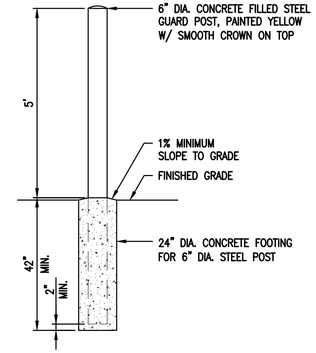
12" GATE VALVE AND WELL
(A-A)

NOTES:
1. CEMENT TUCK POINT ALL STRUCTURE JOINTS INSIDE AND OUT
2. FOR WELLS IN PAVEMENT SEE "GATE WELL TOPS WITHIN PAVEMENT AREAS"

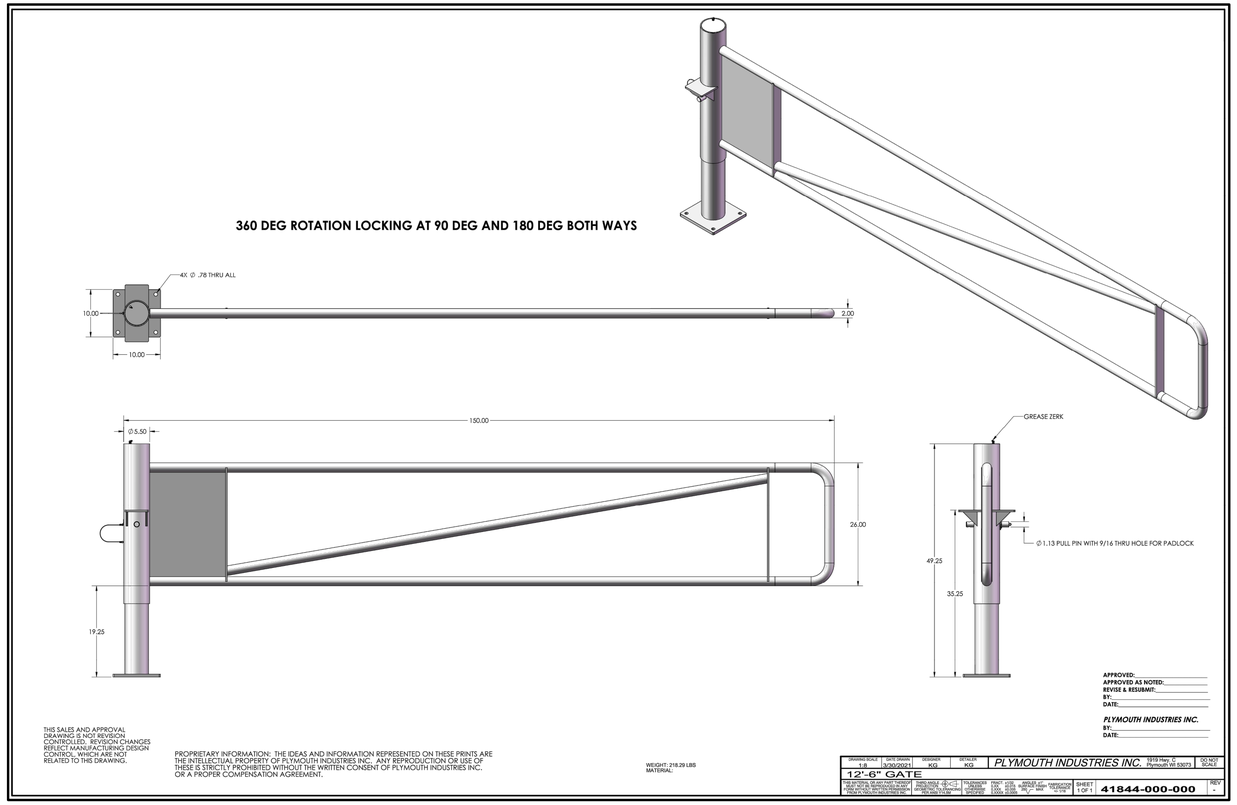


NOTE:
FENCE SUPPLIERS SPECIFICATIONS AND REQUIREMENTS SUPERSEDE ALL NOTES AND DIMENSIONS SHOWN. SHOP DRAWINGS SHALL BE APPROVED BY ENGINEER.

CHAIN LINK FENCE W/ BARBWIRE DETAIL
NO SCALE



BOLLARD DETAIL
NO SCALE



ACCESS BARRIER GATE DETAIL
NO SCALE

NOTE:
OR CITY OF OWOSSO APPROVED EQUAL

OHM
ARCHITECTS ENGINEERS PLANNERS
201 E Ellsworth St, Unit 100
Midland, MI 48640
P (989) 956-2020
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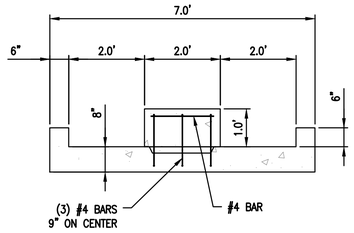
ISSUE	REVISIONS	DATE
ISSUED FOR BID	. . . . .	12/01/2022

DATE: ####
PROJ NUMBER: 0020220080
ENGR/RCH: ES
PROJ MGR: AV
CADD: KB
COUNTY: SHIAWASSEE
MUNICIPALITY: OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
SITE DETAIL SHEET
...

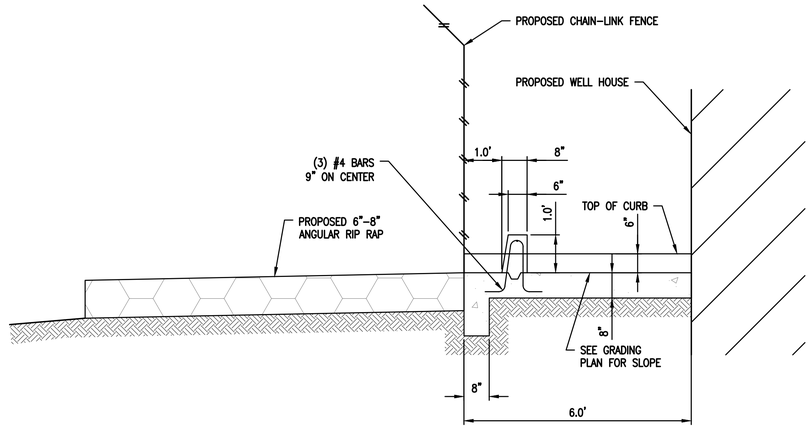
SHEET: C-11

DRAWING PATH: P:\0000_0100\0020220080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Details\220080DET.dwg Dec 01, 2022 - 11:23am



SECTION B–B

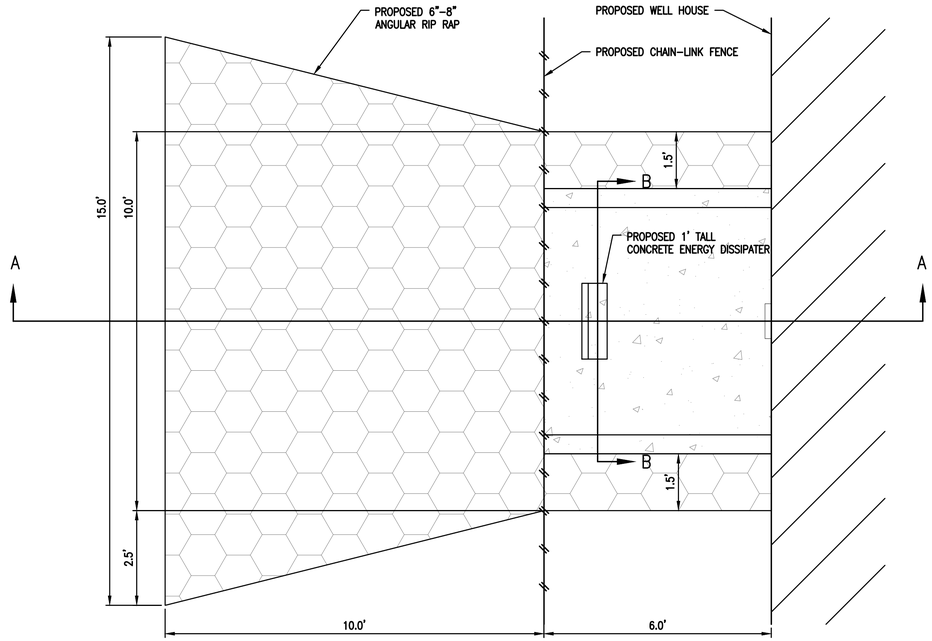
NO SCALE



SECTION A–A

NO SCALE

NOTE: CONCRETE TO BE
3500 PSI MINIMUM



SPLASH PAD DETAIL

NO SCALE

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ISSUE	ISSUED FOR BID	12/01/2022
REVISIONS		

DATE	PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
####	0202220080	ES	AV	KB	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN

SITE DETAIL SHEET

VALUE

SHEET C-12

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

LENGTH (IN FEET) OF RESTRAINT REQUIRED (2)

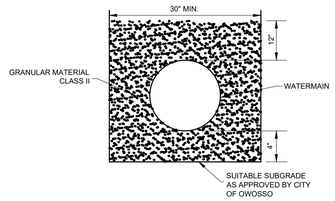
DEFLECTION ANGLE	22½°	33 3/4°	45°	56 1/4°	67 1/2°	78 3/4°	90° OR DEAD END
PIPE							
6"	3	6	11	16	23	29	37
8"	4	8	15	22	31	41	50
10"	5	11	18	28	38	49	61

* 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

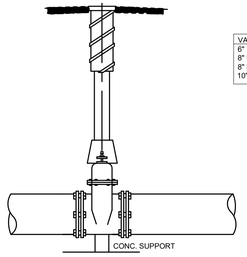


SD-10W WATERMAIN BEDDING DETAIL

NOTES:

1. RESILIENT SEATED WEDGE GATE VALVES SHALL BE PER PROJECT SPECIFICATIONS.

2. VALVE BOXES SHALL BE MADE OF GOOD QUALITY CAST IRON AND SHALL BE OF THE SECTIONAL TYPE. THE LOWER SECTION SHALL BE A MINIMUM OF FIVE (5) INCHES IN DIAMETER, ENLARGED AT THE BASE TO FIT AROUND THE BONNET OF THE VALVE. THE UPPER SECTION SHALL BE ARRANGED TO SLIDE OR SCREW DOWN OVER THE ADJOINING LOWER SECTION AND SHALL BE FULL DIAMETER THROUGHOUT. VALVE BOXES SHALL BE PROVIDED WITH CAST IRON LIDS OR COVERS. LIDS OR COVERS SHALL BE MARKED "WATER". THE OVER-ALL LENGTH OF VALVE BOXES SHALL BE SUFFICIENT TO PERMIT THE TOP TO BE SET FLUSH WITH THE FINAL GROUND SURFACE GRADE. VALVE BOXES SHALL BE AS MANUFACTURED BY TRAVERSE CITY IRON WORKS, CLOW CORPORATION OR APPROVED EQUAL.

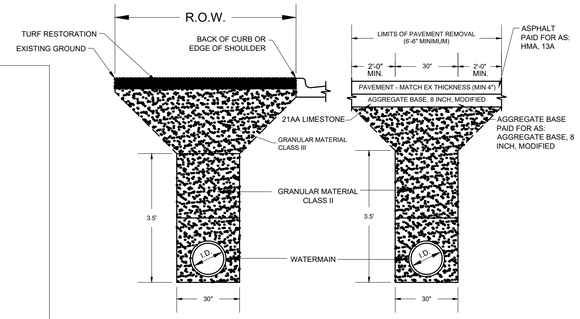


VALVE SIZE	MIN. BASIN SIZE
6"	BOX-3 PIECE
8" UNPAVED	BOX-3 PIECE
8" PAVED	BOX-3 PIECE
10" - 12"	BOX-3 PIECE

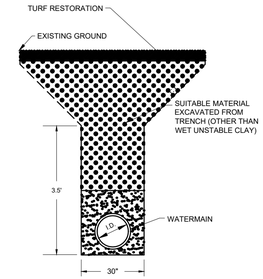
SD-4W WATER VALVE AND VALVE BOX DETAIL

NOTE:
ALL MECHANICAL JOINTS SHALL BE RESTRAINED WITH MEGA LUGS OR APPROVED EQUAL. LENGTH OF RESTRAINT SHALL BE DETERMINED BY MANUFACTURER AND DIPRA, AND APPROVED BY CITY OF OWOSSO. THE MINIMUM REQUIRED RESTRAINT LENGTHS ARE SHOWN IN DETAIL SD-7W. MANUFACTURER RESTRAINT LENGTHS THAT ARE LESS THAN SHOWN IN SD-7W MUST BE APPROVED BY CITY OF OWOSSO.

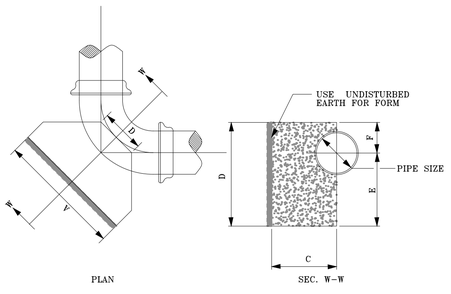
SD-3W LOCATION OF RESTRAINED JOINTS



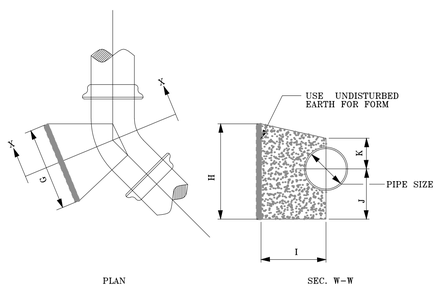
TRENCH BACKFILL DETAIL 'G'
TYPICAL WATERMAINS
UNDER ROADBED AND/OR WITHIN INFLUENCE OF ROADBED, DRIVEWAY, OR SIDEWALK, OR LOCATED WITHIN THE ROAD RIGHT-OF-WAY



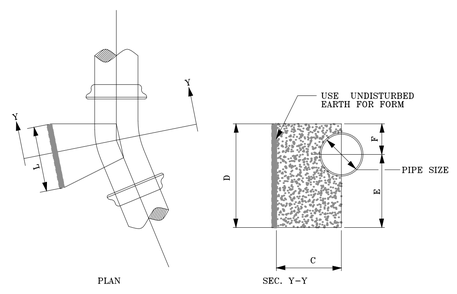
TRENCH BACKFILL DETAIL 'F'
TYPICAL WATERMAINS
NOT WITHIN INFLUENCE OF ROADBED, DRIVEWAY, OR SIDEWALK, AND LOCATED OUTSIDE OF ROAD RIGHT-OF-WAY



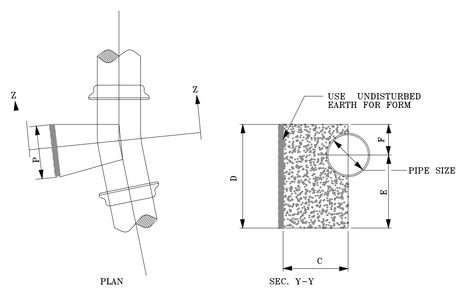
DETAIL OF BLOCK FOR 90° BEND OR TEE
NO SCALE



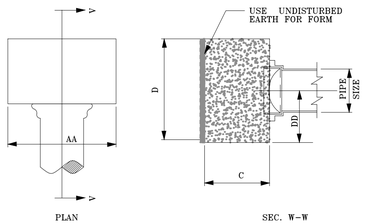
DETAIL OF BLOCK FOR 45° BEND
NO SCALE



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



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

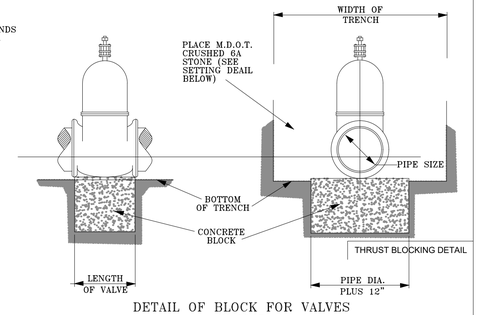


DETAIL OF BLOCK FOR PLUGS
NO SCALE

NOTE: TABLE BELOW IS BASED IN WATER MAIN PRESSURE OF 100 P.S.I. WIRTH 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				MINIMUM CONCRETE REQUIRED	90° BENDS OR TEE						MINIMUM CONCRETE REQUIRED	45° BENDS					MINIMUM CONCRETE REQUIRED	22 1/2° BENDS				MINIMUM CONCRETE REQUIRED	11 1/4° BENDS			MINIMUM CONCRETE REQUIRED	SIZE OF MAIN
	AA	BB	CC	DD		A	B	C	D	E	F		G	H	I	J	K		L	M	N	O		P	Q	R		
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'-0"	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"	1'-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 CONCRET USED FOR BLOCKING SHALL BE A MINIMUM COMPRESSIVE STRENGTH OF 3000 POUNDS PER SQUARE INCH IN TWENTY-EIGHT (28) DAYS.



DETAIL OF BLOCK FOR VALVES
NO SCALE

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REVISIONS	

DATE	PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
####	002222080	ES	AV	KB	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN

CITY OF OWOSSO - WATER MAIN STANDARD DETAILS

SHEET C-13

DRAWING PATH: P:\0000_0100\002022080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Details\220080DET.dwg Dec 01, 2022 - 11:24am

12/1/2022 12:21:22 PM

STRUC. ABBR.

A	
ALUM	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ARCH	ARCHITECTURAL (ARCHITECT)
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
B	
BF	BOTH FACES
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BOF	BOTTOM OF FOOTING
BOT	BOTTOM
BRG	BEARING
BRKT	BRACKET
BTWN	BETWEEN
C	
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
D	
DEG	DEGREE
DET	DETAIL
DIA	DIAMETER
DIST	DISTANCE
DL	DEAD LOAD
E	
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ENG	ENGINEER
ENTR	ENTRANCE
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EX	EXISTING
EXP	EXPANSION (EXPOSED)
F	
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FIN	FINISH / FINISHED
FT	FOOT / FEET
FTG	FOOTING
G	
GA	GAGE
GALV	GALVANIZED
GB	GYPSUM BOARD
GYP	GYPSUM
H	
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
I	
IN	INCH / INCHES
INSUL	INSULATION
J	
JST	JOIST
JT	JOINT
L	
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
LP	LOW POINT
LT	LEFT

STRUC. ABBR.

M	
MAX	MAXIMUM
MBC	MICHIGAN BUILDING CODE
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
N	
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
No.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O	
OC	ON CENTER
OH	OVERHEAD
P	
PCF	POUNDS PER CUBIC FOOT
PL	PLATE
PLMB	PLUMBING
PLYWD	PLYWOOD
PREFAB	PREFABRICATED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
Q	
QTY	QUANTITY
R	
REINF	REINFORCE
REQD	REQUIRED
REV	REVISE / REVISION
RO	ROUGH OPENING
RS	ROUGH SAWN
RT	RIGHT
S	
SIM	SIMILAR
SOG	SLAB ON GRADE
SQ FT	SQUARE FOOT / FEET
SQ IN	SQUARE INCH / INCHES
STL	STEEL
T	
T&B	TOP & BOTTOM
T&G	TONGUE & GROOVE
TEMP	TEMPERATURE / TEMPERED
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOW	TOP OF WALL
TYP	TYPICAL
U	
UNO	UNLESS NOTED OTHERWISE
V	
VERT	VERTICAL
VIF	VERIFY IN FIELD
W	
W/	WITH
W/O	WITHOUT
WD	WOOD
WF	WIDE FLANGE
WT	WEIGHT
WWF	WELDED WIRE FABRIC
Y	
YD	YARD

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.
4. SHEATHING SHALL BE APA GRADED AS FOLLOWS:
   A. ROOF SHEATHING: 5/8" MIN, 40/20 EXPOSURE 1
5. INSTALL SOLID 2X S4S BLOCKING AT ALL RAFTER BEARINGS. ADJUST BLOCK DEPTH AS REQUIRED FOR AIR SPACE.
6. FASTEN MEMBERS IN ACCORDANCE WITH MICHIGAN BUILDING CODE TABLE 2304.9.1, UNLESS OTHERWISE NOTED.
7. WHERE NOTED, NAIL SIZES ARE BASED ON THE FOLLOWING MINIMUM SIZES

SIZE	DESIGNATION	MIN SIZE
6d	BOX	2" x 0.099" DIA
6d	COMMON	2" x 0.113" DIA
8d	BOX	2 1/2" x 0.113" DIA
8d	COMMON	2 1/2" x 0.131" DIA
10d	BOX	3" x 0.128" DIA
10d	COMMON	3" x 0.148" DIA
12d	BOX	3 1/4" x 0.128" DIA
12d	COMMON	3 1/4" x 0.148" DIA
16d	BOX	3 1/2" x 0.135" DIA
16d	COMMON	3 1/2" x 0.162" DIA

BUILDING LOADS

BUILDING CLASSIFICATION II

LIVE LOADS

1. UNIFORM FLOOR LIVE LOAD	125 psf
2. ROOF LOAD - SEE SNOW LOAD	24 psf
3. INTERIOR WALL LATERAL LIVE LOAD	15 psf

DEAD LOADS

1. MATERIAL DEAD LOAD	15 psf
2. MECHANICAL DEAD LOAD	5 psf

SNOW LOADS

BALANCED SNOW	24 psf
1. GROUND SNOW LOAD, P_G	30 psf
2. FLAT-ROOF SNOW LOAD, P_F	24 psf
3. SNOW EXPOSURE FACTOR, C_E	1.0
4. RISK CATEGORY	II
5. SNOW LOAD IMPORTANCE FACTOR, I_S	1.0
6. ROOF THERMAL FACTOR, C_T	1.1
7. SLOPED ROOF FACTOR, C_{SU}	1.0
8. SLOPED ROOF SNOW LOAD, P_S	24 PSF

WIND LOADS $V_{ASD}=V_{ULT}(0.6)^{1/2}$ $Q_{ASD}=Q_{ULT}(0.6)$

LOAD OR VARIABLE	
1. ULTIMATE DESIGN WIND SPEED (3-SECOND GUST)	115 mph
2. RISK CATEGORY	II
3. WIND EXPOSURE CATEGORY	C
4. INTERNAL PRESSURE COEFFICIENT (ENCLOSED BUILDING)	± 0.18
5. MAIN WIND FORCE RESISTING SYSTEM (MAX ROOF UPLIFT AT OVERHANG)	31 psf
6. MAIN WIND FORCE RESISTING SYSTEM (MAX WALL)	23 psf
7. COMPONENTS & CLADDING DESIGN PRESSURE (ZONE 1)	+15, -37 psf
8. COMPONENTS & CLADDING DESIGN PRESSURE (ZONE 2)	+15, -44 psf
9. COMPONENTS & CLADDING DESIGN PRESSURE (ZONE 3)	+15, -76 psf
10. COMPONENTS & CLADDING DESIGN PRESSURE (ZONE 4)	+29, -32 psf
11. COMPONENTS & CLADDING DESIGN PRESSURE (ZONE 5)	+29, -39 psf

EARTHQUAKE DESIGN DATA

LOAD VARIABLE	
1. RISK CATEGORY	II
2. SEISMIC IMPORTANCE FACTOR, I_E	1.0
3. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETER, S_S	0.08 g
4. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETER, S1	0.043 g
5. SITE CLASS	D
6. SEISMIC DESIGN CATEGORY	B
7. BASIC SEISMIC FORCE RESISTING SYSTEM: ORDINARY REINFORCED MASONRY SHEAR WALLS	
8. SEISMIC RESPONSE COEFFICIENT(S), C_S (SECTION 12.8.1.1)	0.0244
9. RESPONSE MODIFICATION COEFFICIENT(S), R(SECTION 12.2-1)	2
10. ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE, SECTION 12.8	

ASSUMED SOIL BEARING STRENGTH 2000 psf

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 THUS 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 SOIL 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 T0 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 (f'c = 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.
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. REINFORCING STEEL 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.

BAR SIZE	REINFORCEMENT LAP SPLICE LENGTH+					
	f'c = 3,000 psi		f'c = 4,000 psi		f'c = 5,000 psi	
	TOP BARS*	ALL OTHER BARS	TOP BARS*	ALL OTHER BARS	TOP BARS*	ALL OTHER BARS
#3	28"	22"	24"	19"	22"	17"
#4	37"	29"	33"	25"	29"	23"
#5	47"	36"	40"	31"	36"	28"
#6	56"	43"	49"	38"	44"	34"
#7	81"	63"	70"	54"	63"	49"
#8	93"	72"	81"	62"	72"	56"

* TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF FRESH CONCRETE BELOW BAR.
\+ LAP SPLICE LENGTHS SHOWN ARE CLASS B SPLICE LENGTHS FOR UNCOATED OR GALVANIZED BARS WITH CLEAR COVER OF db 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. SPLICE 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/SLAB

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, F'm = 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.
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 DURATRUSS OR EQUAL.

BAR SIZE	MINIMUM LAP SPLICE f'm = 1,500 psi	MINIMUM LAP SPLICE f'm = 1,900 psi	COMMENTS
#3	18"	18"	
#4	26"	24"	
#5	40"	35"	MIN 8" CMU
#6	74"	66"	MIN 8" CMU
#7	101"	89"	MIN 12" CMU
#8	151"	135"	MIN 12" CMU

* LAP SPLICE 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

VIEW REFERENCES

SIM / 1 / X-XXX — DETAIL INDICATOR

SIM / 1 / X-XXX — SECTION DETAIL INDICATOR

1 / X-XXX — ALTERNATE DETAIL / SECTION DETAIL INDICATOR

SIM / 1 / X-XXX — WALL SECTION INDICATION

SIM / 1 / X-XXX — BUILDING SECTION INDICATOR

SIM / 1 / X-XXX — EXTERIOR ELEVATION INDICATOR

SIM / 1 / X-XXX — INTERIOR ELEVATION INDICATOR

BUILDING ELEMENTS

- NEW CONSTRUCTION
- NEW MASONRY CONSTRUCTION
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED

NOTES & ANNOTATIONS

- (E) — INDICATES EXISTING
- XX — SHEET KEYNOTE INDICATOR
- 00 00 00.A — REFERENCE KEYNOTE INDICATOR
- 1 — REVISION INDICATOR
- ROOM NAME / 101 / 150 SF — ROOM IDENTIFIER, ROOM NUMBER, ROOM AREA
- N — NORTH INDICATOR, PLAN NORTH, TRUE NORTH
- (100'-0") (100'-8") — SLAB STEP LOCATION WITH ELEVATIONS
- SLAB STEP LOCATION
- OR — CHANGE IN SLAB SLOPE (UP OR DOWN)
- CHANGE IN SLAB THICKNESS
- APPROXIMATE LOCATION OF UTILITY PIPE PENETRATION THROUGH FOUNDATION WALL
- APPROXIMATE LOCATION OF DRAIN TILE
- SPAN DIRECTION OF ELEMENT
- EXTENT OF ELEMENT
- CONTINUOUS EXTENT OF ELEMENT
- WELDED WIRE FABRIC REINFORCING

CONNECTION TYPES

- BOLTED
- BOTTOM FLANGE BRACING
- CANTILEVER
- CANTILEVER MOMENT
- COLLECTOR
- DOUBLE SHEAR TAB
- FULL DEPTH WELD
- MOMENT
- MOMENT FRAME
- SPLICE
- TOP FLANGE WELD

INDICATOR LINES & POINTS

- INDICATOR OF APPROXIMATE LOCATION OF SOIL BORING
- INDICATOR OF APPROXIMATE LOCATION OF MONUMENT
- INDICATOR OF FINISH ELEVATION
- CENTER LINE
- LEVEL XXX' - XX" — ELEVATION MARK
- MATCHLINE / SEE 1 / A101 — MATCHLINE
- e1 — EXISTING GRID LINE
- 1 — NEW GRID LINE
- BL1 — NEW BUILDING LINE

SYSTEM SPECIFIC SYMBOLS

(REFER TO SCHEDULES)

MASONRY SYSTEM

(E) WMT — WALL

INDICATES EXISTING — (E) MC1 — DO — BEAM / COLUMN

REBAR FRAMING SYSTEM

TOP BARS

#X @ X'-XX" MAX MIN TYP (QUANTITY - BAR SIZE - LENGTH)

#X @ X'-XX" MAX MIN TYP (BAR SIZE - LENGTH - SPACING)

BAR SPACING FOR FULL EXTENTS OF ARROW

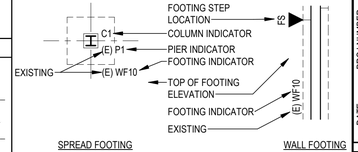
BOTTOM BARS

#X @ X'-XX" MAX MIN TYP (QUANTITY - BAR SIZE - LENGTH)

#X @ X'-XX" MAX MIN TYP (BAR SIZE - LENGTH - SPACING)

BAR SPACING FOR FULL EXTENTS OF ARROW

FOUNDATION SYSTEM



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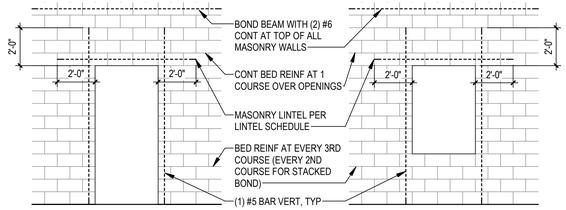
PROJ NUMBER	PROJ MGR	COUNTY
0020-22-0080	AV	SHIAWASSEE

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
Juniper Street
Owosso, MI 48867

STRUCTURAL NOTES AND SYMBOLS

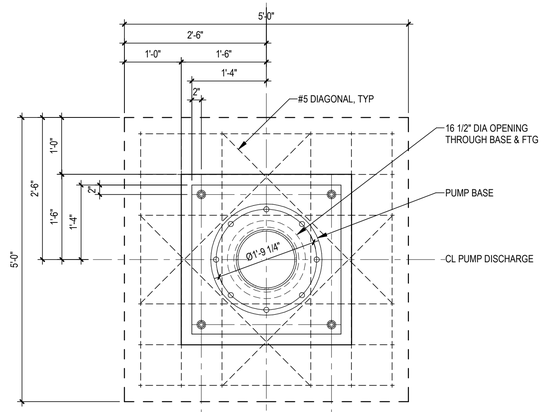
SHEET S-1

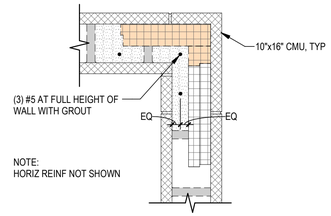
BIM 360://0020-22-0080-Juniper 1 Wellhouse/0020220080_A_Juniper1Wellhouse_2021_CEN.rvt



9 TYP MASONRY OPENING REINFORCING IN ELEVATION

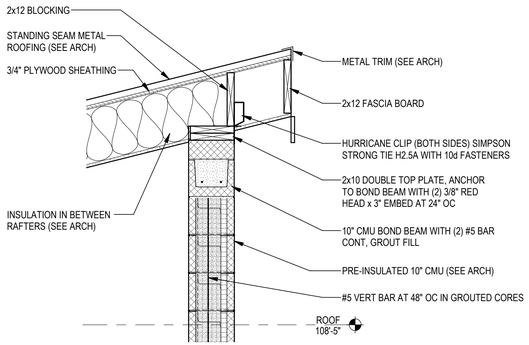
1/4" = 1'-0"





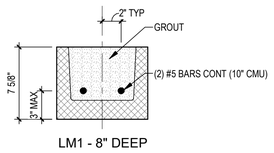
8 CMU CORNER REINFORCEMENT

1" = 1'-0"



7 TOP OF WALL CONNECTION

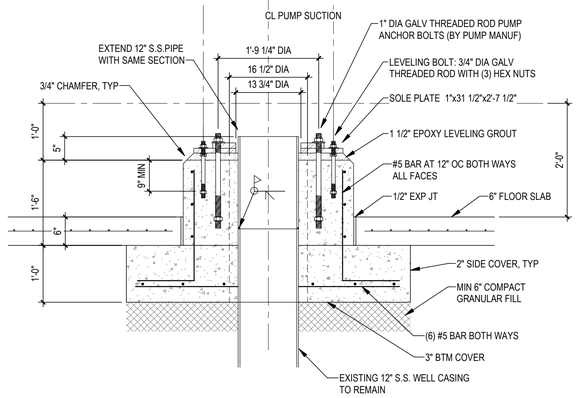
3/4" = 1'-0"



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

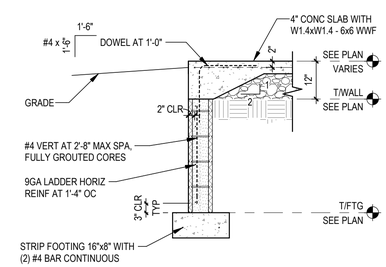
6 TYP CMU MASONRY LINTELS

1 1/2" = 1'-0"



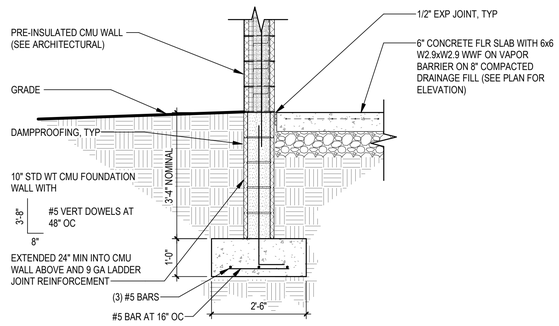
5 PUMP CONCRETE PAD

3/4" = 1'-0"



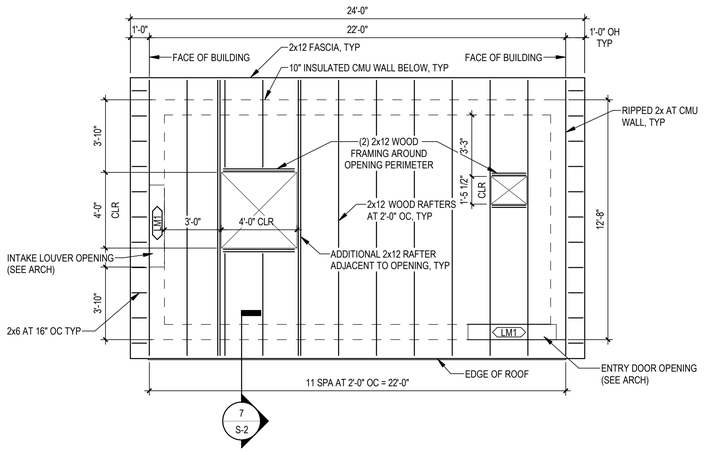
4 STOOP FOUNDATION

1/2" = 1'-0"



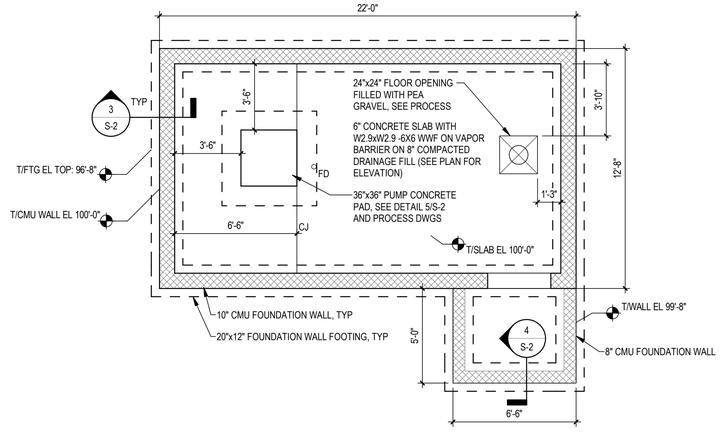
3 TYP FOUNDATION WALL SECTION

1/2" = 1'-0"



2 ROOF FRAMING PLAN

1/4" = 1'-0"



1 FOUNDATION PLAN

1/4" = 1'-0"

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DATE	PROJ NUMBER	PROJ MGR	COUNTY
12/05/2022	0020-22-0080	AV	SHIAWASSEE

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
Juniper Street
Owosso, MI 48867

FOUNDATION PLAN, FRAMING PLAN AND DETAILS

SHEET S-2

2022-12-01 16:39:14

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	
IN	INCH / INCHES
L	
LB	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
- SIM / 1 / X-XXX — SECTION DETAIL INDICATOR
- 1 / X-XXX — ALTERNATE DETAIL / SECTION DETAIL INDICATOR
- SIM / 1 / X-XXX — WALL SECTION INDICATOR
- SIM / 1 / X-XXX / SIM — BUILDING SECTION INDICATOR
- SIM / 1 / X-XXX — EXTERIOR ELEVATION INDICATOR
- SIM / 1 / SIM / X-XXX / SIM / 1 / SIM — INTERIOR ELEVATION INDICATOR
- 1 / X-XXX — 3D VIEW INDICATOR

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

NOTES & ANNOTATIONS

- e — INDICATES EXISTING
- XX — SHEET KEYNOTE INDICATOR
- 00 00 00.A — REFERENCE KEYNOTE INDICATOR
- 1 — REVISION INDICATOR
- ROOM NAME / 101 / 150 SF / 1,254 Occ — ROOM IDENTIFIER (ROOM NUMBER, ROOM AREA, OCC. COUNT)
- M6P — WALL TYPE INDICATOR
- W1 — WINDOW / LOUVER INDICATOR (REFER TO WINDOW SCHEDULE)
- 101A — DOOR INDICATOR (REFER TO DOOR SCHEDULE)
- GL-1 — GLAZING INDICATOR (REFER TO PROJECT MANUAL)
- 1 — GLAZING MODIFIER (REFER TO STOREFRONT ELEVATIONS)
- N — NORTH INDICATOR (PLAN NORTH, TRUE NORTH)

BUILDING ELEMENTS

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

INDICATOR LINES

- CENTER LINE
- LEVEL XXX' - XX" — ELEVATION MARK
- SEE 1 / A101 MATCHLINE — MATCHLINE
- e1 — EXISTING GRID LINE
- 1 — PROPOSED GRID LINE
- BL1 — BUILDING LINE
- PROPOSED / EXISTING — SEPARATION INDICATOR
- N/S 90.00 E/W, 100' - 0", EXISTING CORNER, PROPOSED CORNER — PROPERTY LINE INDICATOR

FINISHES

- ROOM FINISH INDICATOR (ROOM NUMBER, WALL FINISH, BASE, FLOOR FINISH) — PT-2 / VB-1 / CPT-P
- ? XXX — FINISH INDICATOR
- 6'-4" / PT-2 — FINISH EXTENT INDICATOR
- CT / LVT / [TS-1] — TRANSITION STRIP INDICATOR

FF&E

- S2436-12-RF — CASEWORK INDICATOR (REFER TO INTERIOR ELEVATIONS)
- E.MB 24'-0" — VISUAL DISPLAY BOARD INDICATOR (CB = CHALKBOARD, MB = MARKER BOARD, TB = TACK BOARD, TS = TACK STRIP, LENGTH)
- TC-1 — ACCESSORY, FURNITURE, FIXTURE, AND EQUIPMENT INDICATOR
- SIGNAGE INDICATOR (REFER TO SCHEDULE)

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

1. 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
2. ALL WALL DIMENSIONS ARE TO FACE OF STUD OR MASONRY, UNO.
3. 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
4. ALL WOOD BLOCKING AND BACKING SHALL BE FIRE-RETARDANT TREATED, UNO
5. INFORMATION SHOWN IN ONE LOCATION ON THE DRAWINGS IS THE SAME AS IF SHOWN ON MULTIPLE LOCATIONS
6. TYPICAL CONDITIONS ARE NOTED ONLY ONCE
7. COORDINATE OPENINGS AND PENETRATIONS BETWEEN TRADES
8. FLOORS MUST BE MADE LEVEL TO NO LESS THAN 1/8" IN 10', USING A 10' STRAIGHTEDGE
9. 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	Shiawassee	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:	Actual:	
[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		-

Energy Efficiency

ASHRAE 90.1 2010

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

1. FIRST FLOOR REFERENCE ELEVATION 100'-0" = 776.50'
2. 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.
3. ALL MASONRY DIMENSIONS ARE NOMINAL, UNO

GENERAL NOTES - REF. CEILING PLAN

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

GENERAL NOTES - ROOF PLAN

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

XX.## 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 — CALCULATED OCCUPANT LOAD AT EGRESS CAPACITY OF EGRESS COMPONENT
- (X'-X") — TRAVEL DISTANCE TO NEAREST EXIT
- Path Label — PATH OF EGRESS TRAVEL; TRAVEL DISTANCE TO EXITS = 300 FT MAX; COMMON PATH OF TRAVEL = 75' MAX; DEAD ENDS = 20' MAX

PORTABLE FIRE EXTINGUISHERS

- FIRE EXTINGUISHERS
- MULTI-PURPOSE CHEMICAL (CLASS ABC) — 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 X
- BASE (SEE ABOVE) — VB-1
- FLOOR FINISH (SEE ABOVE) — CPT-P X
- DENOTES PATTERN DETAIL
- REFER TO SHEET KEYNOTES ABOVE
- FINISH EXTENTS — 12'-0" — PT-2

REFLECTED CEILING PLAN LEGEND

CEILING TYPES

- CA-1 / X' - X" — CEILING TYPE
- FRP-1 REINFORCED FIBERGLASS WALL PANEL

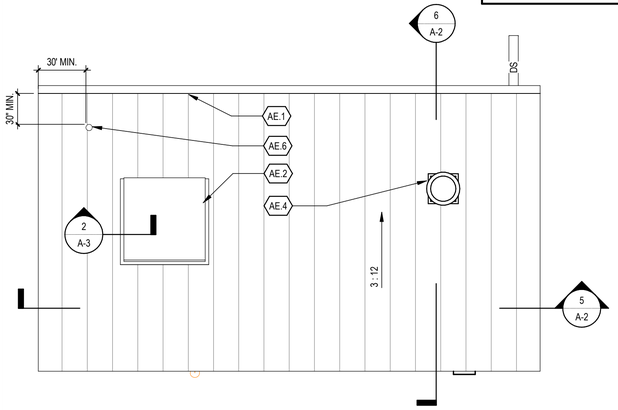
LIGHT FIXTURES

(REFER TO ELECTRICAL DRAWINGS)

- SURFACE / CEILING MOUNT
- WALL MOUNT (INT.) (EXT.)
- INTERIOR EMERGENCY WALL PACK
- EXIT SIGN (WALL) (CEILING)

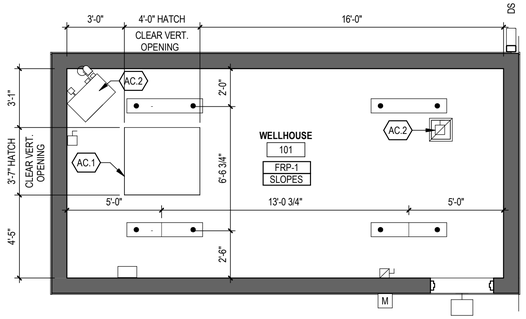
ROOF LEGEND

- METAL - STANDING SEAM
- DS — DOWN SPOUT
- X:12 — ROOF SLOPE



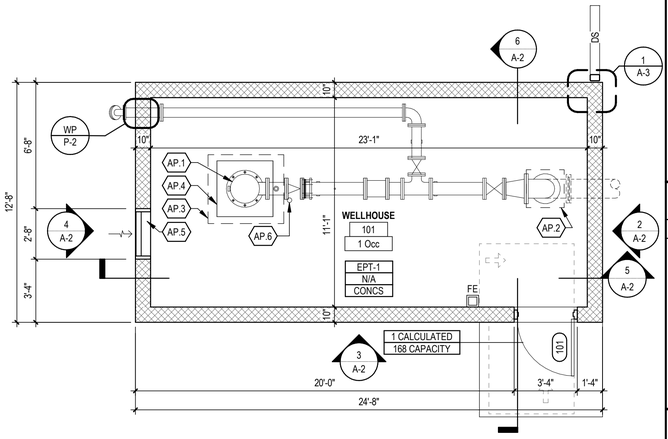
3 ROOF PLAN

1/4" = 1'-0"



2 REFLECTED CEILING PLAN

1/4" = 1'-0"



1 FLOOR PLAN

1/4" = 1'-0"

N

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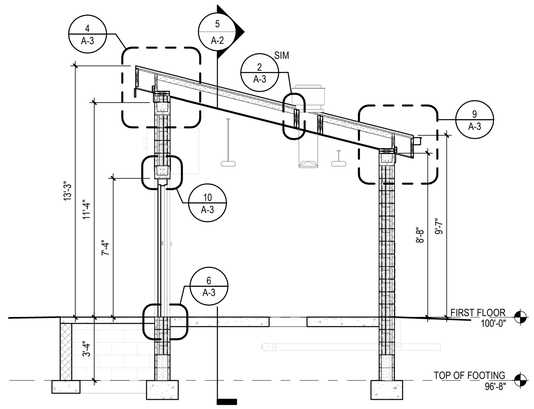
PROJ NUMBER	PROJ MGR	COUNTY
0020-22-0070	AV	SHIAWASSEE

CITY OF OWOSSO
PALMER 3A WELLHOUSE DESIGN

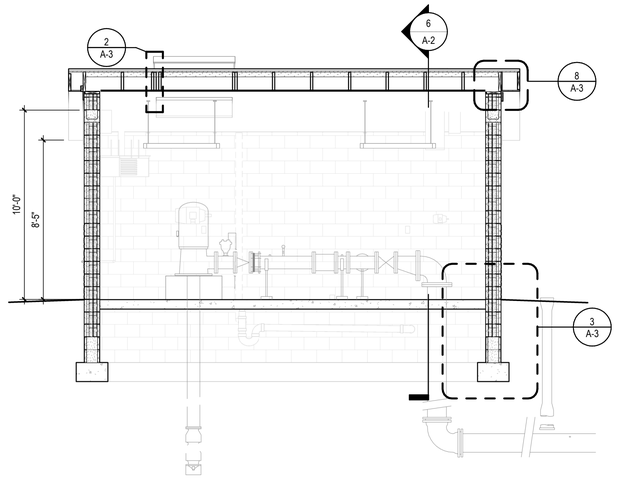
WELLHOUSE PLANS AND GENERAL INFORMATION

SHEET A-1

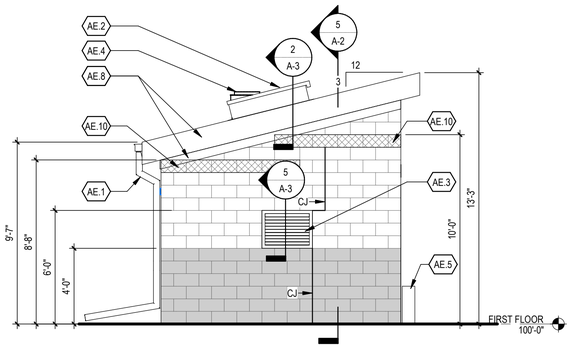
BIM 360://0020-22-0070 Palmer 3A Wellhouse/0020220070_A_Palmer3AWellhouse_2021_CEN.rvt



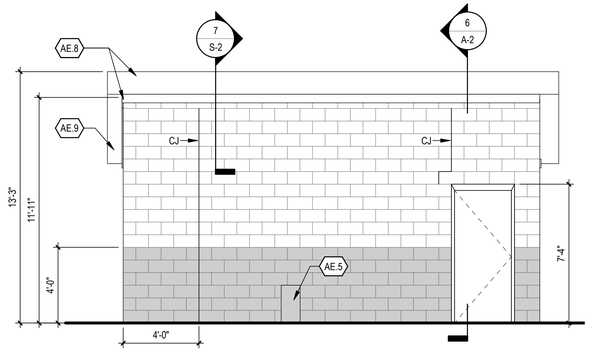
6 BUILDING SECTION
1/4" = 1'-0"



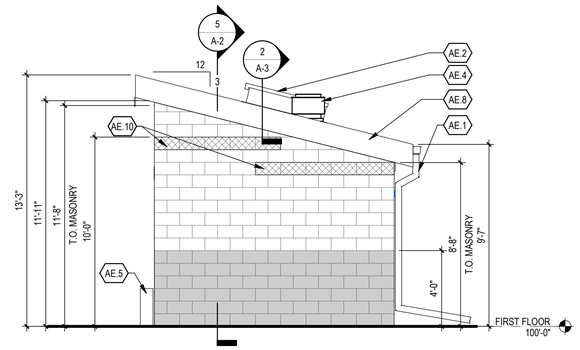
5 BUILDING SECTION
1/4" = 1'-0"



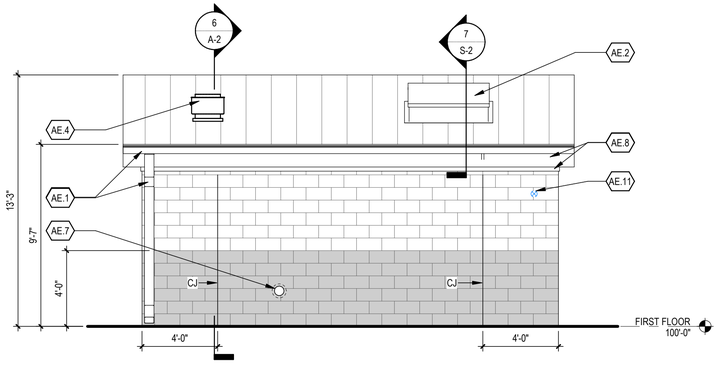
4 WEST ELEVATION
1/4" = 1'-0"



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

XX.## SHEET KEYNOTES

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: MECHANICAL
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

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" HI-R INSULATED MASONRY UNITS, COLOR AS SELECTED BY ARCHITECT

SPLIT FACE CMU
CONCRETE PRODUCTS GROUP, 10"x8"x16" HI-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

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CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
Juniper Street
Owosso, MI 48867

WELLHOUSE ELEVATIONS AND SECTIONS

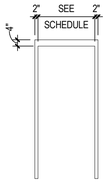
SHEET A-2

2022-12-01 13:34:22

DOOR TYPES

F

DOOR FRAME TYPES



F2

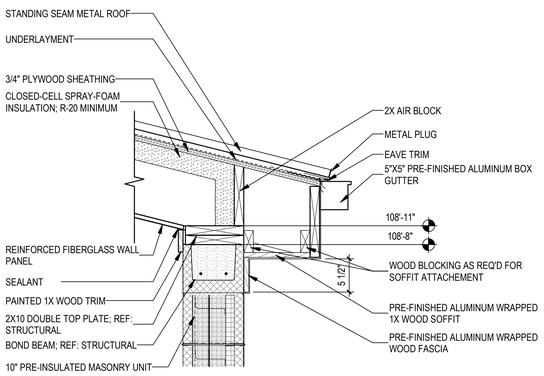
DOOR SCHEDULE

SCHEDULE KEY:

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 PVC POLYVINYL CHLORIDE ST STEEL VL VINYL WD WOOD	AL ALUMINUM CW CLAD WOOD EXST EXISTING TO REMAIN FG FIBERGLASS HM HOLLOW METAL PVC 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

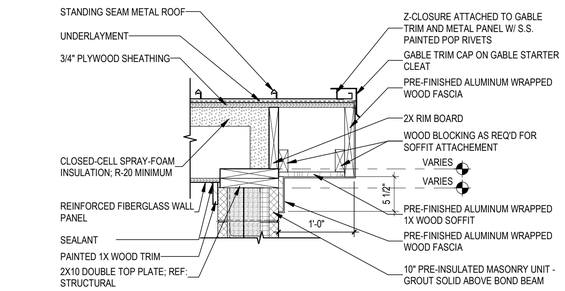
SCHEDULE NOTES:
1.

REV.	MARK	SIZE			NO. OF LEAFS	DOOR			FRAME				GLAZING TYPE	DETAIL			FIRE RATING		HDW	NOTES
		WIDTH	HEIGHT	THICK.		TYPE	MAT'L	FINISH	TYPE	MAT'L	FINISH	DEPTH		HEAD	JAMB	THSH	WALL	LBL.		
	101	3'-0"	7'-0"	1 3/4"	1	F	FG	PF	F2	FG	PF	5 3/4"	N/A	10/A-3	7/A-3	6/A-3			1	



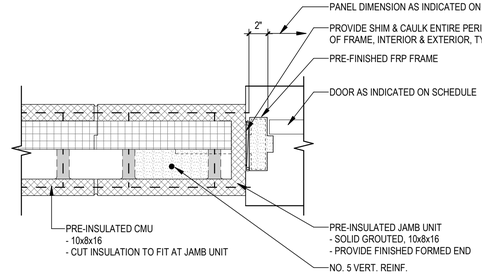
9 SECTION DETAIL - NORTH ROOF OVERHANG

1" = 1'-0"



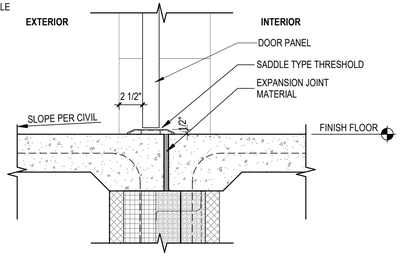
8 SECTION DETAIL - EAST & WEST ROOF OVERHANGS

1" = 1'-0"



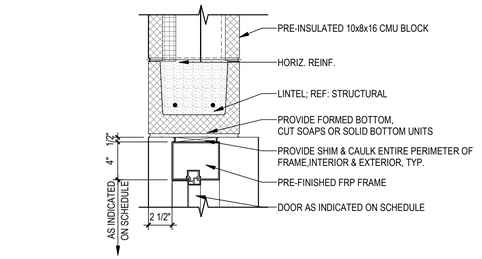
7 F2 - JAMB

1 1/2" = 1'-0"



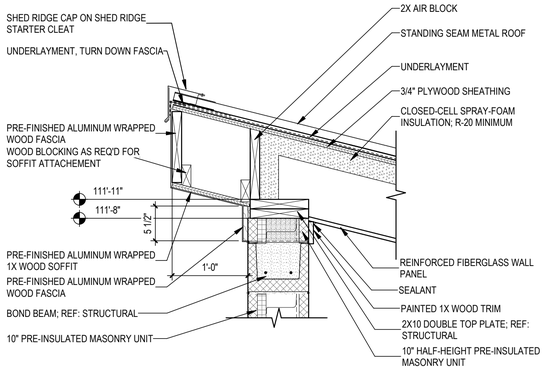
6 F2 - THRESHOLD

1 1/2" = 1'-0"



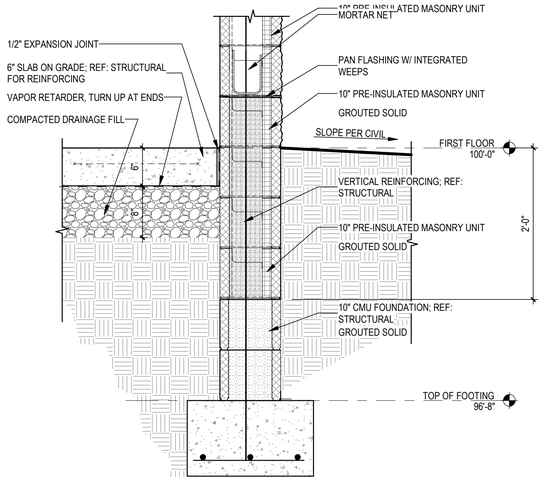
10 F2 - HEAD

1 1/2" = 1'-0"



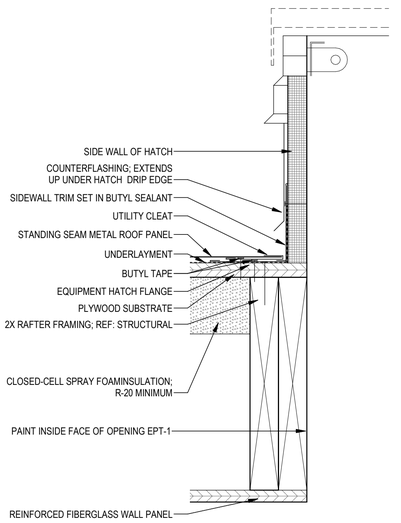
4 SECTION DETAIL - ROOF OVERHANG

1" = 1'-0"



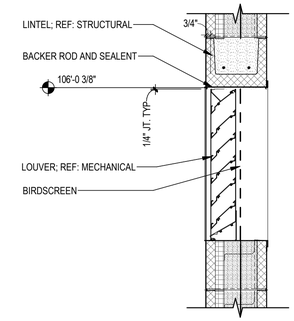
3 SECTION DETAIL - FOUNDATION WALL

1" = 1'-0"



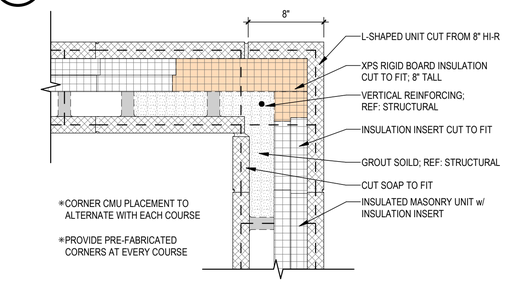
2 SECTION DETAIL - EQUIPMENT HATCH CURB

3" = 1'-0"



5 SECTION DETAIL - LOUVER

1" = 1'-0"



1 PLAN DETAIL - INSULATED MASONRY UNIT CORNER

1 1/2" = 1'-0"

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DATE	PROJ NUMBER	PROJ MGR	COUNTY
12/05/2022	0020-22-0080	AV	SHIAWASSEE

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
Juniper Street
Owosso, MI 48867

WELLHOUSE SCHEDULES AND DETAILS

SHEET A-3

GENERAL PROCESS NOTES

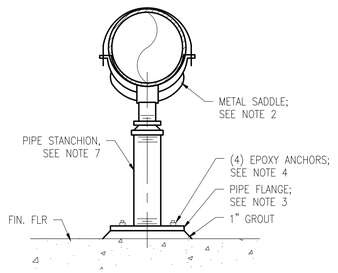
1. PROCESS EQUIPMENT DIMENSIONS, LOCATIONS AND PIPING SYSTEM LAYOUTS ARE BASED ON EQUIPMENT SELECTED AND SPECIFIED AND BY THE DESIGN ENGINEER. IF THE CONTRACTOR PROPOSES TO FURNISH EQUIPMENT THAT REQUIRES AN ARRANGEMENT OR SPACE DIFFERING FROM THAT INDICATED ON THE DRAWINGS OR SPECIFIED, THE CONTRACTOR 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.
2. EXTERIOR PIPING IS SHOWN ON THE CIVIL DRAWINGS.
3. DIELECTRIC COUPLINGS, FLANGES OR UNIONS SHALL BE INSTALLED AT ALL CONNECTIONS OF COPPER PIPE TO OTHER TYPES OF METALLIC PIPING.
4. 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.
5. 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.
6. UNLESS OTHERWISE SHOWN, ALL PIPES UNDER CONCRETE SLABS SHALL BE ENCASED IN CONCRETE.
7. 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.
8. PIPING SHALL BE INSTALLED SO THAT ANY PIPE, LAYER OF PIPING OR EQUIPMENT CAN BE REMOVED WITHOUT DISTURBING REMAINING PIPES AND SUPPORTS.
9. 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.
10. INSTALL ALL PIPING SUPPORTS AND PIPING IN ACCORDANCE WITH THE LATEST EDITION OF THE ASME ANSI POWER PIPING CODE B 31.1.
11. LOCATE PRESSURE TAPS ON THE TOP OF PROCESS PIPES.
12. LOCATE SAMPLE TAPS ON THE SIDE OF PROCESS PIPES.
13. UNLESS OTHERWISE NOTED, PIPE ELEVATIONS SHOWN ON PROCESS DRAWING REFER TO CENTERLINE OF THE PIPE.
14. 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".
15. INSTALL ALL PLUG, BUTTERFLY AND BALL VALVES WITH THE SHAFT IN THE HORIZONTAL POSITION, UNLESS OTHERWISE DIRECTED.
16. 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.

PROCESS PIPE & FITTINGS SYMBOL NOTES

1. GENERIC JOINT SYMBOL IS USED FOR ALL SINGLE LINE PIPING SHOWN ON THE INTERIOR AND EXTERIOR PIPING DRAWINGS.
2. BOTH DETAILED AND SIMPLIFIED FLANGE REPRESENTATION SYMBOLS MAY BE SHOWN ON THE DRAWINGS.
3. 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.
4. WHERE DISSIMILAR METALS MAY COME IN CONTACT, CONTRACTOR SHALL PROVIDE ISOLATION FITTING, GASKETS, OR OTHER SUITABLE ISOLATION.

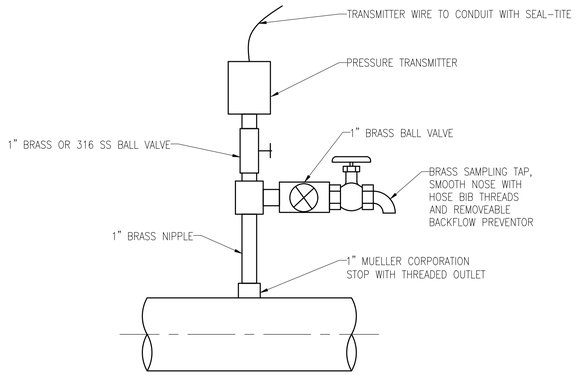
PIPE PENETRATION NOTES

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



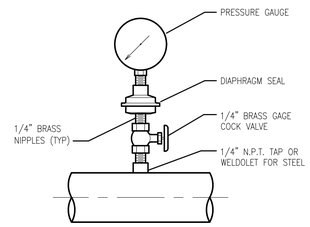
NOTES:
1. FOR PIPE DIAMETERS 4" TO 12"
2. METAL SADDLE SHALL BE GRINNELL FIGURE 259 OR EQUAL.
3. PIPE FLANGE SHALL BE CLASS 150 STEEL SLIP-ON FLANGE, FLAT FACED. SIZED TO MATCH STANCHION PIPE.
4. ANCHORS SHALL BE EMBEDDED MIN. OF 4". SIZE ANCHOR PER PIPE SUPPORT DIAMETER AND SADDLE MANUFACTURER RECOMMENDATIONS.
5. MAX SPACING BETWEEN SUPPORTS IS 20'.
6. PROVIDE $\frac{1}{8}$" DIAM. WEEP HOLE THRU ONE WALL ONLY OF PIPE STANCHION.
6. INSTALL ANVIL FIGURE 63, TYPE C OR EQUAL. SELECT STANCHION SIZE APPROPRIATE FOR PIPE SIZE AND HEIGHT REQUIREMENTS.

PS 1 **PIPE STANCHION SADDLE**
NO SCALE



PRESSURE TRANSDUCER AND SAMPLE TAP

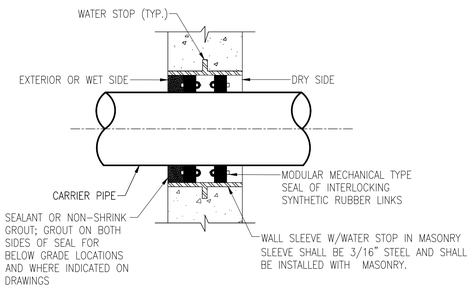
NO SCALE



1. PROVIDE SNUBBER FOR ALL INSTALLATIONS.
2. PROVIDE DIAPHRAGM SEALS FOR ALL WASTEWATER SERVICES OTHER THAN SLUDGE.
3. LOCATE PRESSURE TAPS ON TOP OF PROCESS PIPING.
4. FOR STEEL, VAL. STEEL, AND PVC 2.5" AND SMALLER USE A BUSHING IN A TEE.
5. FOR DI AND FRP PIPE, ALL SIZES, USE PIPE SADDLE WITH BUSHING.
6. FOR STEEL AND SS PIPES 3" AND LARGER, AND PRESSURE VESSELS, USE THRED-O-LET.

PRESSURE GAUGE TAP

NO SCALE



NOTES:
1. 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.
2. NUTS TO FACE DRY SIDE (INTERIOR) TO ALLOW FUTURE ADJUSTMENTS.
3. PROVIDE ONE SEAL FOR WALLS LESS THAN 12" THICK AND TWO SEALS FOR WALLS 12" THICK AND GREATER
4. IF BOTH SIDES ARE WET, GROUT OR SEALANT IS NOT REQUIRED, UNLESS OTHERWISE NOTED.
5. 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.

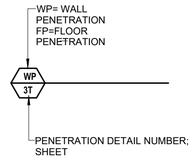
WP 1 **WALL PENETRATION - MECHANICAL SEAL**
NO SCALE

MISCELLANEOUS SYMBOLS

- 3-WAY VALVE
- BFP — BACK FLOW PREVENTER
- HOSE BIB
- CONNECT TO EXISTING
- ELBOW DOWN
- ELBOW UP
- TEE UP
- TEE DOWN
- CLEAN OUT
- END CAP/BULKHEAD
- FLUSH/HOSE CONNECTION
- Y-STRAINER
- BASKET STRAINER
- REGULATOR
- FILTER
- LUBRICATOR
- FLEXIBLE CONNECTION
- IN-LINE MIXER
- AIR PUMP CONNECTION FITTING
- ULTRASONIC LEVEL INDICATOR
- SP — SAMPLE POINT
- CF — CHEMICAL FEED INJECTION POINT
- PROCESS FLOW DIRECTION
- PRESSURE GAGE
- PRESSURE GAGE W/ SHUT OFF
- PRESSURE GAGE W/ DIAPHRAGM SEAL
- PRESSURE GAGE W/ DIAPHRAGM SEAL & SHUTOFF VALVE
- PRESSURE GAGE W/ ISOLATION RING
- FM — FLOW METER
- PUMP
- BLOWER
- CHEMICAL METERING PUMP (SIDE VIEW)
- PARSHALL FLUME
- MOTOR

CALIBRATION COLUMN | SIGHT GLASS | ROTOMETER | PULSATION DAMPENER | MIXER

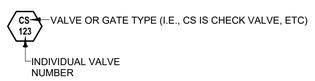
PIPE PENETRATION TAG



PIPE SERVICE TYPE (SCHEMATIC ONLY)

- POTABLE WATER
- DRAIN
- RAW WATER
- AIR
- CHEMICAL
- INSTRUMENTATION

VALVE AND GATE TAG



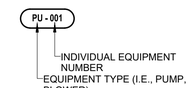
VALVE DESIGNATIONS

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

PIPE JOINT DESIGNATIONS

DOUBLE LINE PIPING	SINGLE LINE PIPING	TYPE
		FLANGED JOINT
		MECHANICAL JOINT
	GFA	GROOVED FLANGE ADAPTER
	GPC	GROOVED PIPE COUPLING
	BFC	BOLTED FLEXIBLE COUPLING
	FCA OR RFCA	FCA=FLANGED COUPLING ADAPTER RFCA=RESTRAINED FLANGED COUPLING ADAPTER
	MFA	MEGAFLANGE ADAPTER
	FA	FLANGE ADAPTER
	FXJ	FLANGED EXPANSION JOINT
		UNION
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER - FLUSH TOP
		ECCENTRIC REDUCER - FLUSH BOTTOM
		QUICK DISCONNECT COUPLING

EQUIPMENT TAG



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ISSUE	DATE
ISSUED FOR BID	12/01/2022
REVISIONS	

DATE	PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
####	002222080	MK	AV	FH	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
PROCESS LEGEND, NOTES, & DETAILS

SHEET P-1

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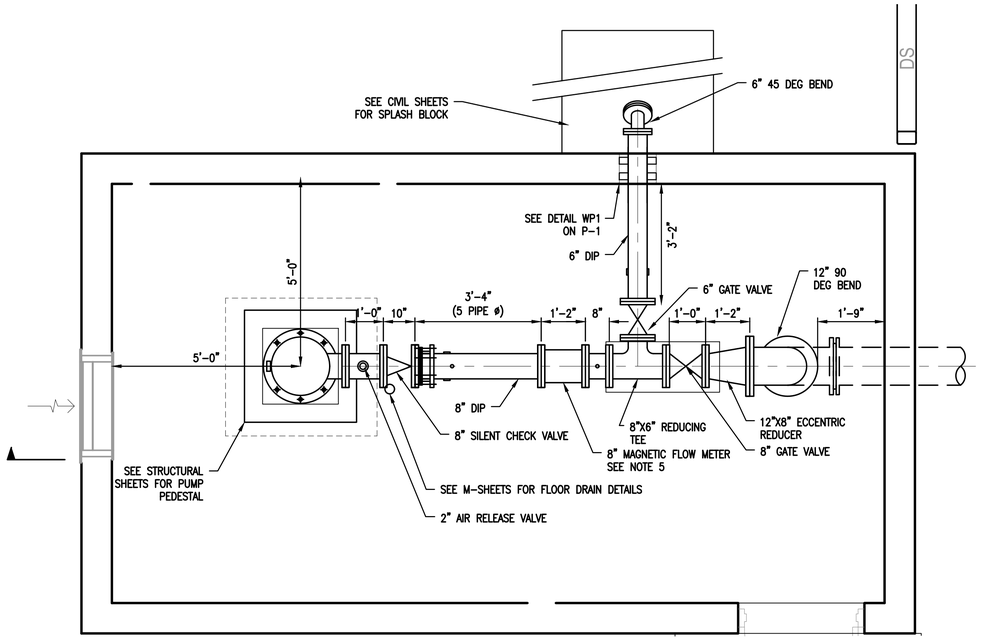
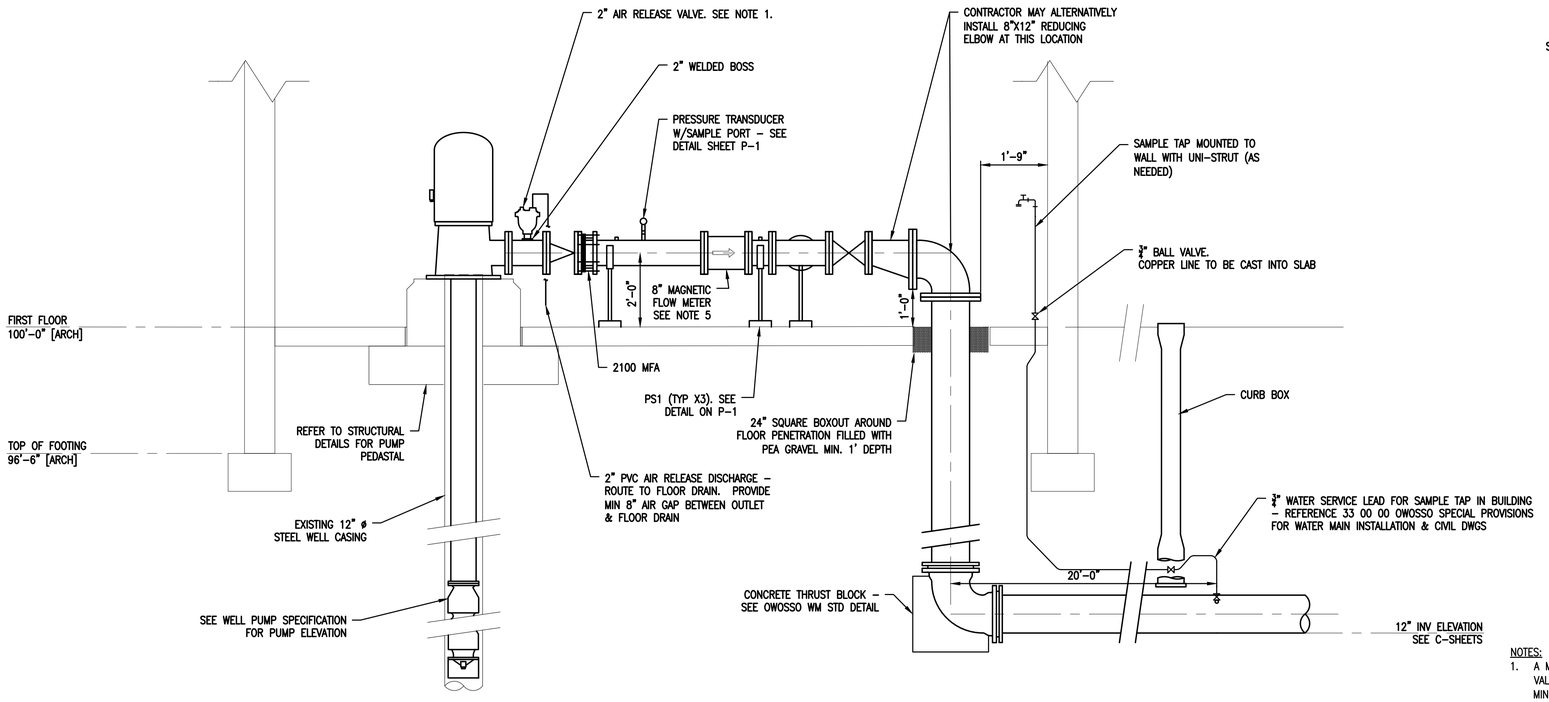


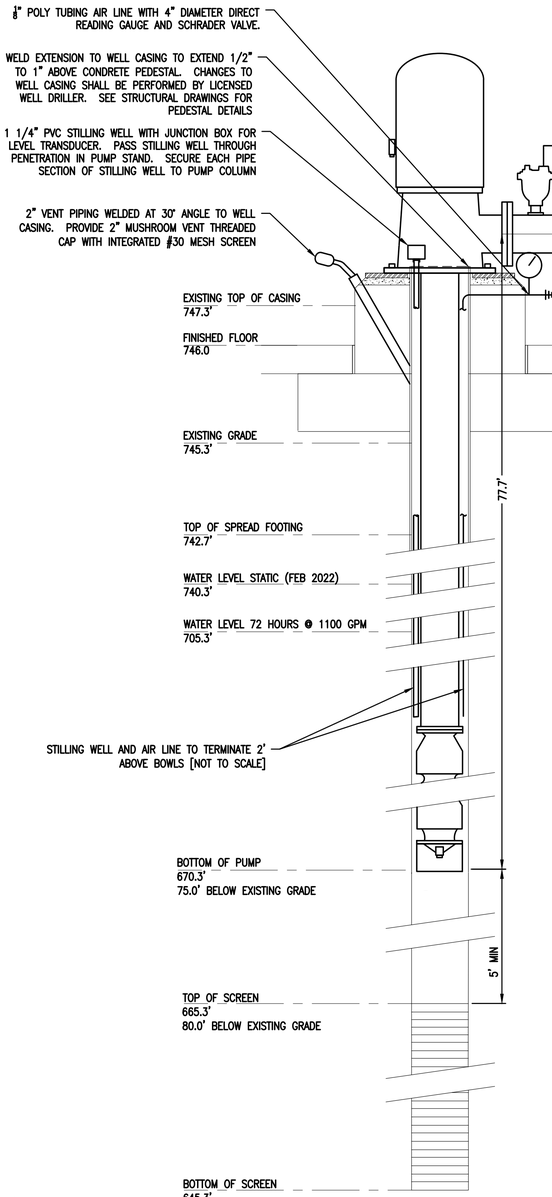
2
P1

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

N



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



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

NOTES:
1. 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 THE FLOOR DRAIN.
2. SEE STRUCTURAL DRAWING FOR PUMP PEDESTAL DETAILS
3. ALIGN ROOF HATCH WITH CENTERLINE OF WELL
4. WELL PUMP SHALL BE INSTALLED BY PREAPPROVED WELL DRILLER/INSTALLER - NORTHERN PUMP AND WELL, PEERLESS MIDWEST, OR RAYMER WATER WELLS.
5. MAGNETIC FLOW METER SHALL REQUIRE ZERO LENGTHS OF STRAIGHT PIPE UP AND DOWNSTREAM.
6. ALL UNDERGROUND DIP JOINTS SHALL BE RESTRAINED

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ISSUE	REVISIONS	
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DATE	PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
####	002220080	MK	AV	FH	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
PROCESS LEGEND, NOTES, & DETAILS

SHEET P-2

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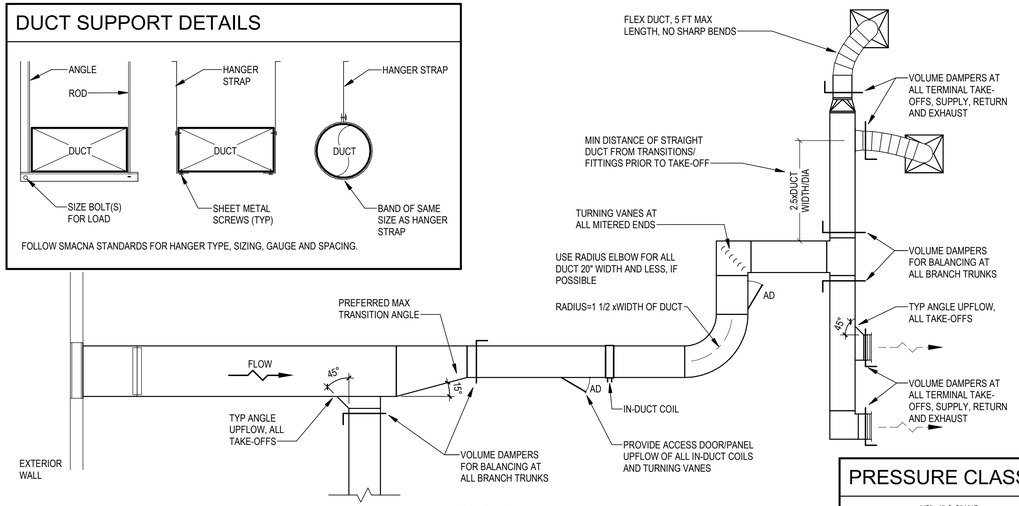
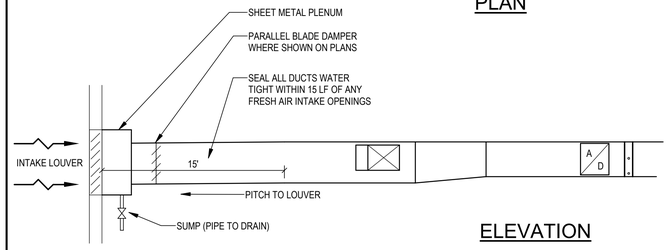
DUCTWORK REQUIREMENTS

DUCT SUPPORT DETAILS

FOLLOW SMACNA STANDARDS FOR HANGER TYPE, SIZING, GAUGE AND SPACING.



PLAN



ELEVATION

PRESSURE CLASS

1/2", 1" & 2" WG
CFM PER 100 SQ FT @ 1" WG

SEAL CLASS	C
RECTANGULAR DUCT	24
ROUND DUCT	12

NOTES

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

GENERAL NOTES - PLUMBING

1. ALL PLUMBING EQUIPMENT AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE 2018 STATE OF MICHIGAN PLUMBING CODE AND THE 2018 INTERNATIONAL PLUMBING CODE.
2. 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.
3. THE PLUMBING CONTRACTOR SHALL FURNISH SHOP DRAWINGS ON FIXTURES, APPURTENANCES AND MATERIALS THAT HE INTENDS TO FURNISH, FOR APPROVAL TO OWNER.
4. 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.
5. PLUMBING PIPING: DOMESTIC WATER: ABOVE GROUND, 2 1/2" AND SMALLER, TYPE L, SOLDERED (95/5) JOINTS
6. PLUMBING PIPING: DWV: HUB & SPIGOT CAST IRON ASTM-A74, HUBLESS CAST IRON ASTM-A888, SCHEDULE 40 PVC ASTM-D1785 AND D2665, FITTINGS ASTM-D2466.
7. 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.

GAS LOAD SCHEDULE

MARK	DESCRIPTION	BTU / HOUR	CU FT / HOUR	REMARKS
GUH-1	GAS UNIT HEATER	45,000	45	
NA	GENERATOR	1,247,000	1,247	BASED ON 7-11 IN WC AND GENERATOR OPTION FOR SAME
TOTALS		1,292,000	1,292	

VALVES

- 3-WAY VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- CONTROL VALVE
- GATE VALVE
- GLOBE VALVE
- RELIEF VALVE
- BFP — BACK FLOW PREVENTER
- PRV — PRESSURE REDUCING VALVE
- PV — WATER REGULATOR VALVE
- GM — GAS METER
- WM — WATER METER

PIPE FITTINGS

- HOSE BIB
- CONNECT TO EXISTING
- ELBOW DOWN
- ELBOW UP
- TEE UP
- TEE DOWN
- CLEAN OUT
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- END CAP
- UNION
- STRAINER
- FLANGED CONNECTION
- EXPANSION JOINT

PIPE FITTINGS

- AIR CHAMBER
- AIR ELIMINATOR
- S — AIR SEPARATOR
- AUTOMATIC AIR VENT
- COMPOUND GAUGE
- PRESSURE GAUGE
- SHOCK ABSORBER

OTHER SYMBOLS

- XX-X — PLUMBING FIXTURE / EQUIPMENT INDICATOR
- FD — FLOOR DRAIN

PLUMB. ABBR.

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

GENERAL NOTES - MECHANICAL

1. FIELD VERIFY LOCATIONS OF EXISTING PIPING THAT MAY CONFLICT WITH NEW CONSTRUCTION AND RELOCATE AS NEEDED.
2. COORDINATE LOCATIONS OF THE THERMOSTATS WITH OTHER TRADES.
3. PROVIDE BALANCE DAMPERS FOR EACH DIFFUSER/GRILLE AND BRANCH DUCT.
4. COORDINATE ROOF MOUNTED EQUIPMENT SIZES WITH ARCHITECTURAL TRADES PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL FIELD VERIFY THE SIZES, LOCATION, ELEVATIONS, AND DETAILS OF ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EQUIPMENT AND MATERIALS IN A "NEW" CONDITION DURING CONSTRUCTION.
7. ALL EXTERNALLY ISOLATED HVAC EQUIPMENT SHALL HAVE FLEXIBLE DUCT CONNECTORS.
8. ALL CONDENSATE DRAIN PIPING TO TERMINATE TO DRAIN VIA AIR GAP.
9. DRAWINGS INDICATE REQUIRED SIZES AND POINTS OF TERMINATION OF PIPES AND DUCTS AND SUGGESTED ROUTES. IT IS THE NOT INTENTION THE OF 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	
A	AIR
AAV	AUTOMATIC AIR VENT
AD	ACCESS DOOR/PANEL
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP
AS	AIR SEPARATOR
B	
B	BOILER
BDD	BACK DRAFT DAMPER
BFP	BACK FLOW PREVENTER
C	
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRID
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
COND	CONDENSING UNIT
CONV	CONVECTOR
CR	CONDENSATE RETURN
CUH	CABINET UNIT HEATER
D	
DB	DRY BULB
DIA Ø	DIAMETER
DN	DOWN
E	
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
EXST	EXISTING
F	
FCU	FAN COIL UNIT
FPM	FEET PER MINUTE
FPS	FEET PER SECOND

MECH. ABBR.

FT	FOOT / FEET
FTR	FIN TUBE RADIATION
°F	FAHRENHEIT DEGREE
G	
G	NATURAL / LP GAS
GA	GAUGE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	
HC	HOT WATER COIL
HP	HORSEPOWER
HPS	HIGH PRESSURE STEAM
HRU	HEAT RECOVERY UNIT
HVAC	HEATING VENTILATING & AIR CONDITIONING
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HX	HEAT EXCHANGER
I	
IN	INCH / INCHES
K	
KH	KITCHEN HOOD
L	
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB
LF	LINEAL FEET
LPS	LOW PRESSURE STEAM
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
M	
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MIN	MINIMUM
MISC	MISCELLANEOUS
MTD	MOUNTED
MUA	MAKE-UP AIR UNIT

MECH. ABBR.

O	
OA	OUTSIDE AIR
P	
P	PUMP
PH⌷	PHASE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
R	
R	SUPPLY REGISTER
RA	RETURN AIR
RAD	RADIANT HEATER
RD	ROUND DIFFUSER
RF	RETURN FAN
RH	GRAVITY RELIEF HOOD
RPM	REVOLUTIONS PER MINUTE
S	
SA	SUPPLY AIR
SC	STEAM COIL
SD	SMOKE DAMPER
SF	SUPPLY FAN
SP	STATIC PRESSURE
STD	STANDARD
STM	STEAM
SWG	SIDE WALL GRILLE
SWR	SIDE WALL REGISTER
T	
TYP	TYPICAL
U	
UH	UNIT HEATER
V	
V	VENT
VAV	VARIABLE AIR VOLUME
VD	VANED DIFFUSER
W	
WH	WATER HEATER
WPD	WATER PRESSURE DROP

HVAC SYMBOLS LEGEND

DUCTS

	PROPOSED RECTANGLE DROP	PROPOSED RECTANGLE RISE	PROPOSED ROUND DROP	PROPOSED ROUND RISE	EXISTING RECTANGLE DROP	EXISTING RECTANGLE RISE	EXISTING ROUND DROP	EXISTING ROUND RISE	DEMOLISH RECTANGLE DROP	DEMOLISH RECTANGLE RISE	DEMOLISH ROUND DROP	DEMOLISH ROUND RISE
EXHAUST AIR	12x12 EA		12ø EA		12x12 EA		12ø EA		12x12		12ø	
OUTSIDE AIR	12x12 OA		12ø OA		12x12 OA		12ø OA		12x12		12ø	
RETURN AIR	12x12 RA		12ø RA		12x12 RA		12ø RA		12x12		12ø	
SUPPLY AIR	12x12 SA		12ø SA		12x12 SA		12ø SA		12x12		12ø	

DIFFUSERS & GRILLES

- CEILING DIFFUSER
- LINEAR SLOT DIFFUSER
- WALL DIFFUSER/GRILLE
- FLOOR REGISTER
- CEILING GRILLE
- TURNING VANES
- 12x12 — DUCT WIDTH x HEIGHT
- 12ø — ROUND DUCT DIAMETER
- 101.1 / 200 — MARK / FLOW DIFFUSER INDICATOR

HVAC SYMBOLS

- MANUAL VOLUME DAMPER
- MOTORIZED DAMPER
- (HORIZONTAL) (VERTICAL) FIRE DAMPER
- SMOKE DAMPER
- SMOKE AND FIRE DAMPER
- T — THERMOSTAT
- H — HUMIDISTAT
- CONNECT TO EXISTING

OTHER SYMBOLS

- XX-X — EQUIPMENT INDICATOR

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CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
Juniper Street
Owosso, MI 48867

MECHANICAL & PLUMBING NOTES AND SYMBOLS

SHEET M-1

BIM 360://0020-22-0080 Juniper 1 Wellhouse/0020220080_FPME_Juniper1Wellhouse_2021_CEN.rvt

GAS-FIRED UNIT HEATER SCHEDULE

MARK	LOCATION	CFM	HEATING COIL		ELECTRICAL			MANUFACTURER	MODEL	NOTES
			INPUT (MBH)	OUTPUT (MBH)	V/PH/HZ	MCA	MOCP			
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.

FAN SCHEDULE

MARK	SERVICE	LOCATION	FAN TYPE	DRIVE TYPE	CFM	RPM	ESP (IN-WG)	ELECTRICAL		CONTROLS	MANUFACTURER	MODEL	WEIGHT	NOTES
								HP	V/PH/HZ					
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

LOUVER AND DAMPER SCHEDULE

MARK	SERVICE	CFM	SIZE (IN.)	MAX PRESS. DROP (IN-WG)	MAX VELOCITY (FPM)	MINIMUM FREE AREA (FT^2)	MANUFACTURER	MODEL	NOTES
L-1	WELLHOUSE	1,250	32X24	0.05	575	2.1	GREENHECK	ECD-601	1

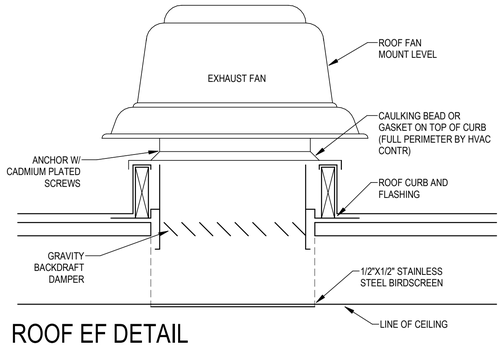
NOTES: 1. PROVIDE WITH ALUMINUM INSECT SCREEN. INTEGRAL DAMPER AND 120V ACTUATOR. INTERLOCK WITH EF-1

PORTABLE DEHUMIDIFIER SCHEDULE

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

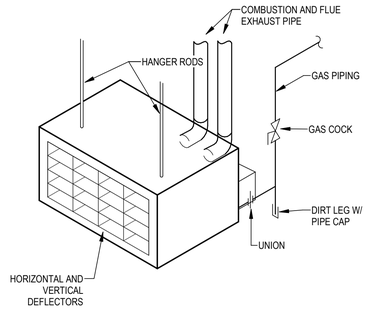
PLUMBING FIXTURE SCHEDULE

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			



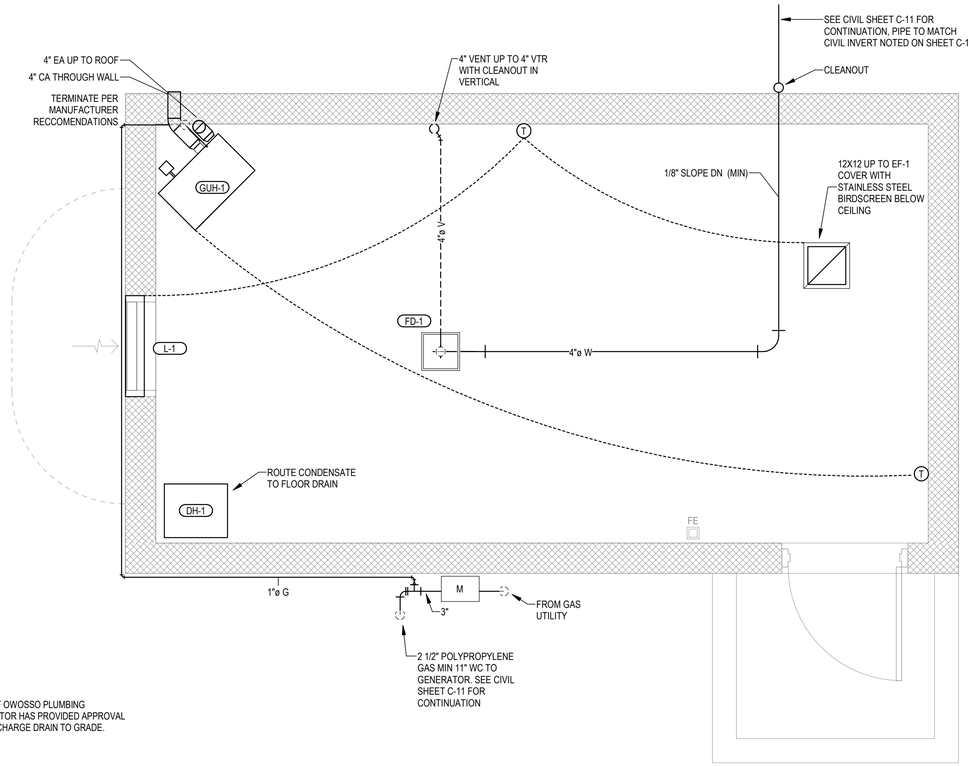
ROOF EF DETAIL

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 JUNIPER BUILDING FLOOR PLAN

1/2" = 1'-0"

N

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CITY OF OWOSSO
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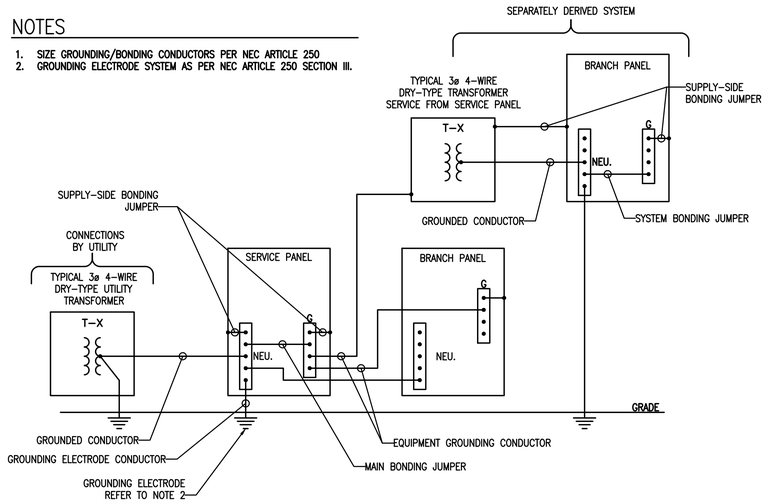
FIRST FLOOR MECHANICAL PLAN

SHEET M-2

NOTES

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



GROUNDING BONDING DIAGRAM

NO SCALE

ELEC. ABBREVIATIONS

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

GENERAL NOTES – ELECTRICAL

1. ALL ELECTRICAL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE CURRENT NATIONAL ELECTRICAL CODE AND ANY STATE/LOCAL AMENDMENTS.
2. 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.
3. 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.

ELECTRICAL LEGEND

LIGHT FIXTURES

- SURFACE / CEILING MOUNT
- EMERGENCY SURFACE / CEILING MOUNT
- PENDANT / CHAIN MOUNT
- EMERGENCY PENDANT / CHAIN MOUNT
- RECESSED MOUNT
- EMERGENCY RECESSED MOUNT
- TRACK STRIP
- WALL MOUNT (INT.) (EXT.)
- EMERGENCY WALL MOUNT (INT.) (EXT.)
- EXTERIOR POLE MOUNT
- EXTERIOR POST MOUNT
- INTERIOR EMERGENCY WALL PACK
- EXIT SIGN (WALL) (CEILING)
- CEILING FAN (LIGHT) (NO LIGHT)

POWER DISTRIBUTION

- DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- COMBINATION MOTOR STARTER W/ DISCONNECT SWITCH
- MOTOR STARTER
- ELECTRICAL METER
- DP# DISTRIBUTION PANEL
- P ELECTRICAL POWER PANEL SURFACE MOUNT
- P ELECTRICAL POWER PANEL FLUSH MOUNT
- R RELAY
- T ELECTRICAL TRANSFORMER
- PB ELECTRICAL PULL BOX
- VARIABLE FREQUENCY DRIVE
- SINGLE PHASE MOTOR
- THREE PHASE MOTOR
- HH HAND HOLE
- J CEILING / J WALL / J SURFACE JUNCTION BOX

RECEPTACLE OUTLETS

- SIMPLEX RECEPTACLE
- DUPLEX GROUNDED RECEPTACLE
  - CTR MOUNTED ABOVE COUNTER
  - G GFCI
  - GC GFCI-MOUNTED ABOVE COUNTER
  - U DUAL USB PORTS
  - UC DUAL USB PORTS ABOVE COUNTER
  - WP WEATHERPROOF COVER W/ GFCI
  - T TAMPERPROOF
  - TC TAMPERPROOF ABOVE COUNTER
  - TGC TAMPERPROOF GFCI ABOVE COUNTER
- 208V,1 ø STRAIGHT BLADE RECEPT
  - D DRYER RECEPTACLE
  - R RANGE RECEPTACLE
- QUADRUPLEX RECEPTACLE
- DUPLEX RECEPT ON EMERGENCY POWER
- FLOOR BOX
- 3ø RECEPTACLE

SWITCH OUTLETS

SWITCHES: X = DESIGNATION BELOW, Z = ZONE DESIGNATION

- 2 SINGLE POLE
- 3 TWO POLE
- 4 THREE WAY
- DM FOUR WAY
- F DIMMER
- K FAN
- LV KEY OPERATED
- M LOW VOLTAGE
- P MOTION DETECTION
- T PILOT LIGHT
- TIMER

SENSORS: X = DESIGNATION BELOW

- CEILING / WALL
  - D DAYLIGHT
  - O OCCUPANCY
  - V VACANCY
- EMERGENCY STOP SWITCH
- PUSH BUTTON SWITCH
- PC PHOTOCELL
- CEILING MOUNTED PULL SWITCH
- WIRELESS NETWORK LIGHTING CONTROLLER
- XX = CONTROLLER INDICATOR

SECURITY

- CR CARD READER
- DC MAGNETIC SWITCH (DOOR CONTACT)
- DL ELECTRONIC DOOR LOCK
- DO MOTORIZED DOOR OPERATOR
- ES ELECTRIC STRIKE
- K KEYPAD ENTRY DEVICE
- CEILING / WALL SECURITY CAMERA

FIRE ALARM SYSTEM

- OUTDOOR BELL / CHIME
- S SMOKE DETECTOR
- S/A SMOKE DETECTOR WITH AUDIBLE BASE
- S/CO SMOKE/CARBON MONOXIDE DETECTOR
- DUCT SMOKE DETECTOR
- HD HEAT DETECTOR
- CEILING / WALL FIRE ALARM HORN/STROBE
- FIRE ALARM STROBE
- FIRE ALARM HORN
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM SPEAKER
- F FIRE ALARM PULL STATION
- DH ELECTRO./MAG DOOR HOLD OPEN
- ELR END OF LINE RESISTOR
- FS FIRE ALARM FLOW SWITCH
- PS FIRE ALARM PRESSURE SWITCH
- TS FIRE ALARM TAMPER SWITCH
- FAA FIRE ALARM ANNUNCIATOR PANEL
- FACP FIRE ALARM CONTROL PANEL
- HSS HOOD SUPPRESSION SYSTEM FIRE ALARM CONTACT

TELEPHONE/COMMUNICATIONS

CEILING WALL FLOOR FURNITURE

X=NUMBER AND TYPE OF PORTS

- C COAXIAL PORT
- D DATA PORT
- P PHONE PORT
- W WIRELESS ACCESS POINT

CEILING / WALL SPEAKER

- IC INTERCOM CALL BOX
- EN ENTRANCE CALL SYSTEM
- B BELL
- M MICROPHONE JACK
- PS POWER SUPPLY
- WG REQUIRES WIRE GUARD
- NURSE NURSE CALL MAIN PANEL
- N NURSE CALL PULL STATION
- NURSE CALL LIGHT
- CLOCK

RACEWAY NOTES

1. MINIMUM SIZE OF RIGID CONDUIT SHALL BE 3/4".
2. MINIMUM SIZE OF FLEX CONDUIT SHALL BE 1/2".
3. MINIMUM SIZE WALL BOX IN CMU SHALL BE 4"X4".
4. MINIMUM SIZE OF UNDERGROUND CONDUIT SHALL BE 1 1/4".

WIRES

	PROPOSED	EXISTING	DEMOLISH
POWER CIRCUIT WIRING			
UNDERGROUND WIRING			
SWITCH LOOP WIRING			
UN-SWITCHED HOT WIRING			
LOW VOLTAGE WIRING			
DATA WIRING			

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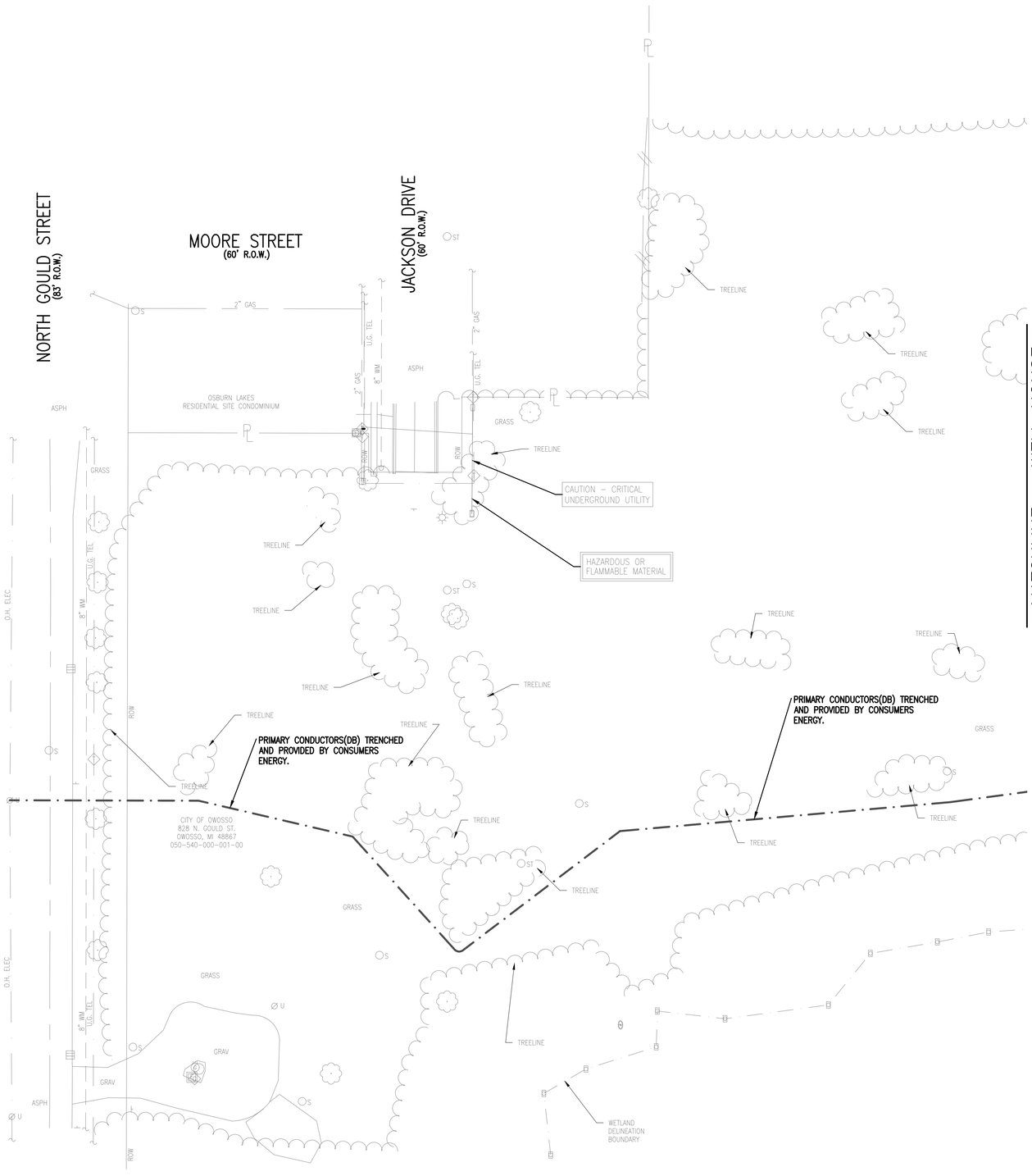
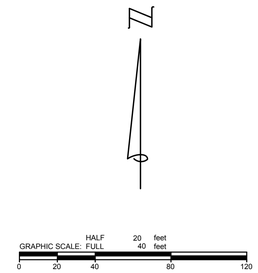
CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
GENERAL ELECTRICAL INFORMATION
VALUE

SHEET E-1

DRAWING PATH: P:\0000_0100\002202080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Plotting\Electrical\E-1 GENERAL ELECTRICAL INFORMATION.dwg Dec 01, 2022 - 3:34pm





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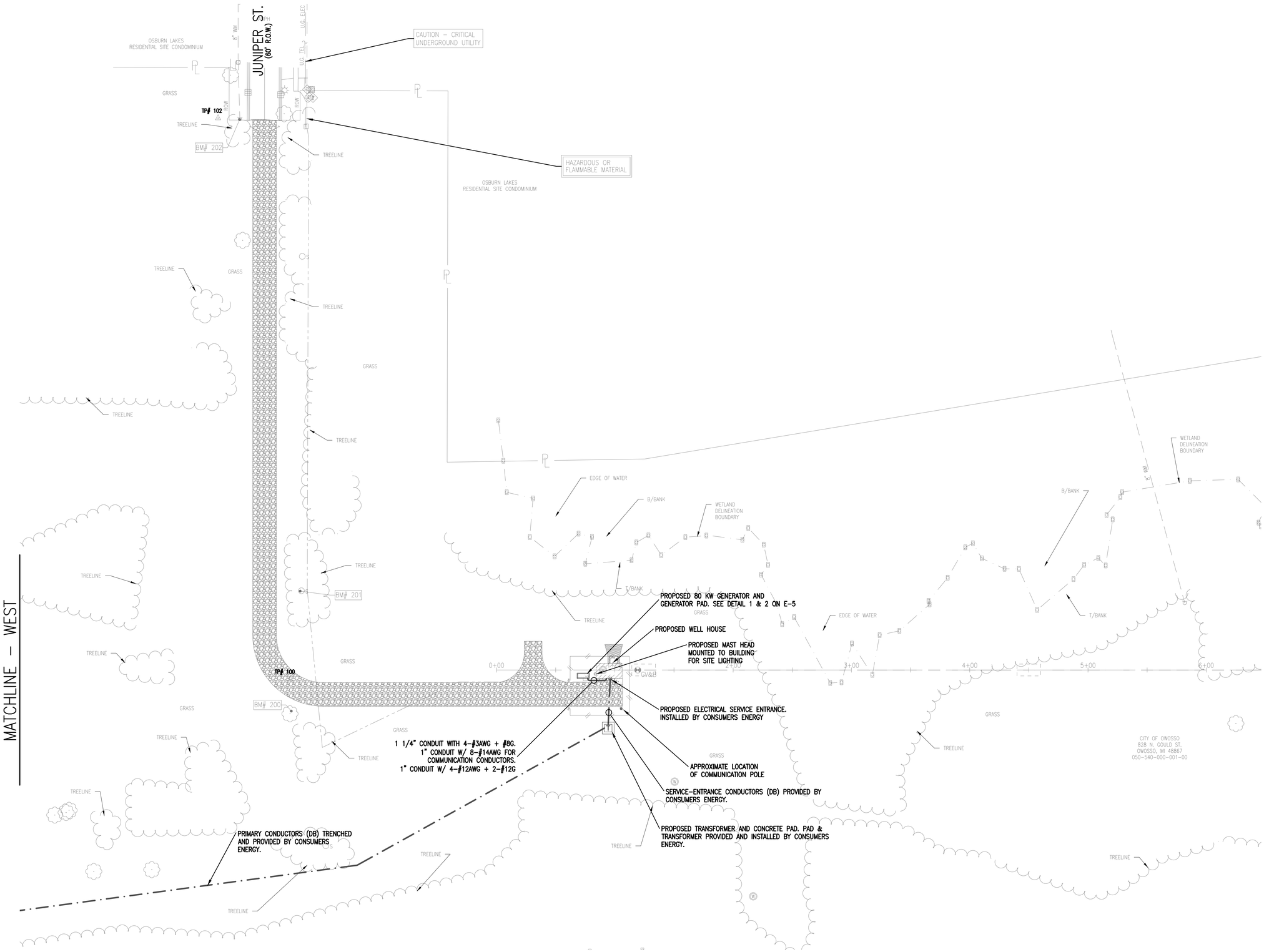
CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN

ELECTRICAL SITE PLAN - WEST

VALUE

SHEET E-2

DRAWING PATH: P:\0000_0100\002222080_Juniper_1_Wellhouse_Design_Bid\Drawings\Civil\Plans_Const\222080ISITE - Electrical.dwg Dec 01, 2022 - 3:34pm



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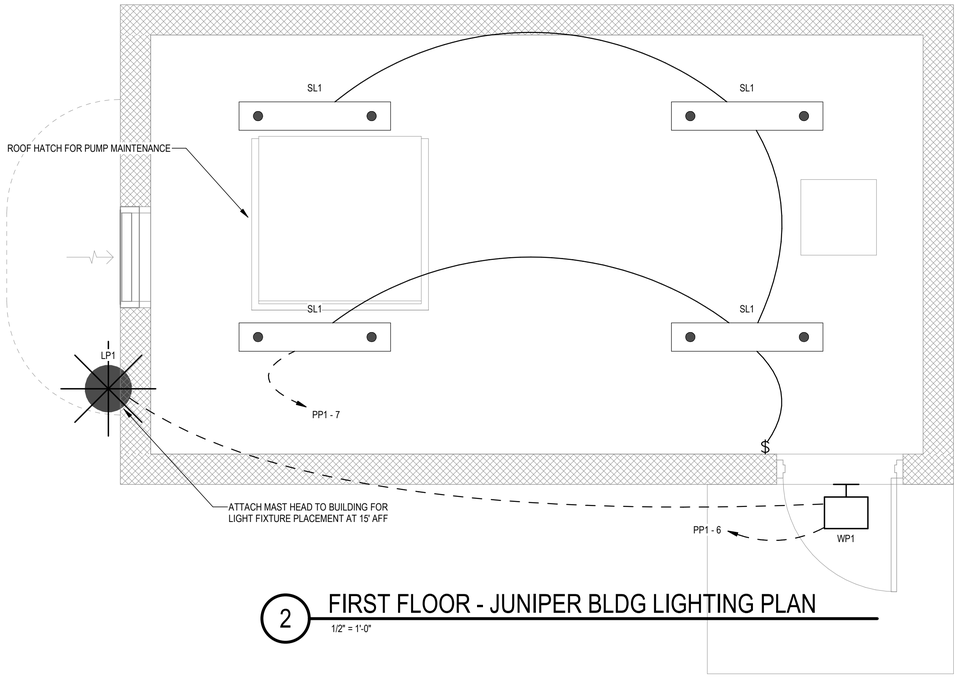
CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
ELECTRICAL SITE PLAN - WELL HOUSE
VALUE

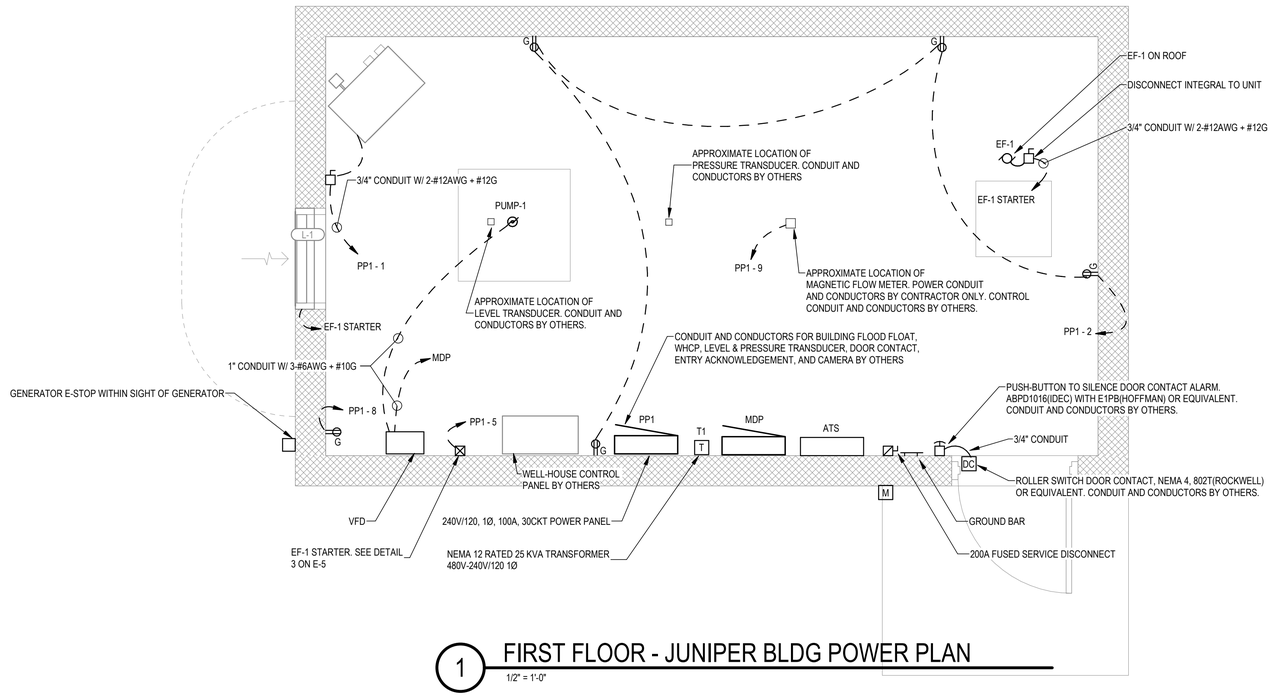
SHEET E-3

DRAWING PATH: P:\0000_0100\0020220080_Juniper-1_Wellhouse_Design_Bid\Drawings\Civil\Plans_Const\220080STE - Electrical.dwg Dec 01, 2022 - 3:34pm



2 FIRST FLOOR - JUNIPER BLDG LIGHTING PLAN

1/2" = 1'-0"



1 FIRST FLOOR - JUNIPER BLDG POWER PLAN

1/2" = 1'-0"

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CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
Juniper Street
Owosso, MI 48867

FIRST FLOOR- JUNIPER POWER & LIGHTING PLAN

N

SHEET E-4

12/1/2022 3:34:46 PM

BRANCH PANEL: MDP

LOCATION: WELLHOUSE 100 | **VOLTS:** 480/277 Wye | **SCCR RATING:** 22K SCCR
SUPPLY FROM: | **PHASES:** 3 | **MAINS TYPE:** MCB
MOUNTING: SURFACE | **WIRES:** 4 | **MAINS RATING:** 200 A
ENCLOSURE: TYPE 1 | **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	CKT	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				
				5			11...			--	6	--	1	--	SPACE
SPACE	--	3	--	7	--			--			8				
				9		--			--		10	--	3	--	SPACE
				11			--			--	12				
SPACE	--	3	--	13	--			--			14				
				15		--			--		16	--	3	--	SPACE
				17			--			--	18				
SPACE	--	3	--	19	--			--			20				
				21		--			--		22	--	3	--	SPACE
				23			--			--	24				
CONNECTED LOAD: (kVA)					14.47			14.47			11.97				

BRANCH PANEL: PP1

LOCATION: WELLHOUSE 100 | **VOLTS:** 120/240 Single | **SCCR RATING:** 10K SCCR
SUPPLY FROM: | **PHASES:** 1 | **MAINS TYPE:** MCB
MOUNTING: SURFACE | **WIRES:** 3 | **MAINS RATING:** 100 A
ENCLOSURE: TYPE 1 | **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
GUH-1	12	1	20	1	0.29		0.72		2	20	1	12	INTERIOR RECEPTACLES
GEN BLOCK WARMER	12	1	20	3		1.50		1.20	4	20	1	12	GEN BATTERY CHARGER &...
EF-1	12	1	20	5	0.86		0.07		6	20	1	12	EXTERIOR LIGHTING
INTERIOR LIGHTING	12	1	20	7		0.26		0.18	8	20	1	12	DH-1
MAGNETIC FLOW METER	12	1	20	9	0.00		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				
				19					20				
				21					22				
				23					24				
				25					26				
				27					28				
				29					30				
CONNECTED LOAD: (kVA)					1.94			0.00					

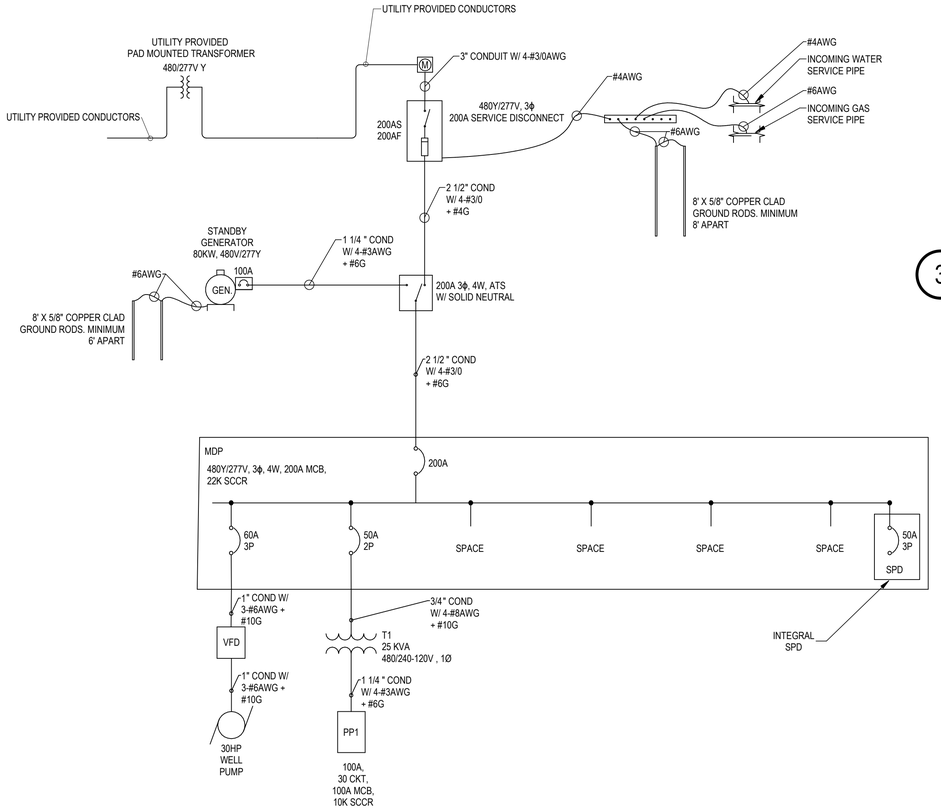
LIGHTING FIXTURE SCHEDULE

SCHEDULE NOTES:

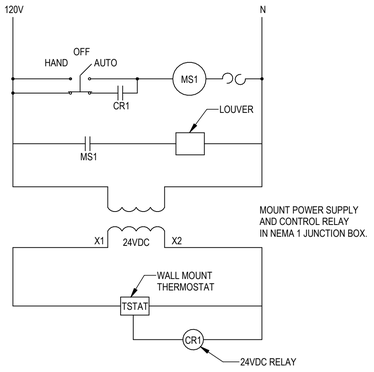
TYPE	DESCRIPTION	MFR.	CATALOG #	LAMPS	WATTS	NOTES
LP1	LIGHT POST	LUMARK	PRP-P-PA2B-740-U-T4W-MA-BK-SPB1	LED	53	REQUIRES MAST HEAD FOR MOUNTING
SL1	LINEAR PENDANT LIGHTING FIXTURE	METALUX	4SNLED-LD5-30SL-LN-UNV-L840	LED	23	
WP1	EXTERIOR WALL PACK	LUMARK	XTOR2B-2-PC1	LED	19	

GENERATOR SCHEDULE

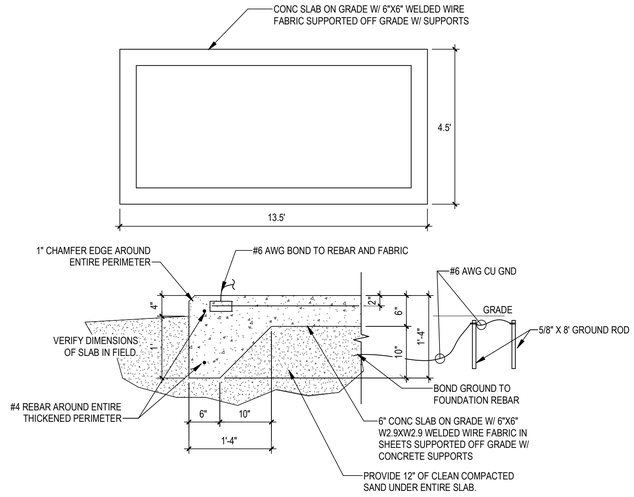
MANUFACTURER	MODEL #	RATING (kW)	FUEL	VOLTAGE	PHASE	COMMENTS
CUMMINS	C80N6	80	NATURAL GAS	480V/277	3Φ	PROVIDE WEATHER PROOF ENCLOSURE AND MUFFLER SILENCER



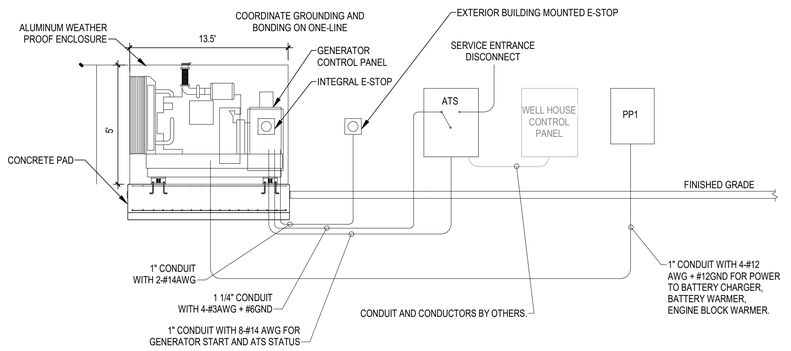
4 JUNIPER ONE LINE DIAGRAM
N.T.S



3 JUNIPER EF-1 CONTROL DETAIL
N.T.S



2 GENERATOR PAD DETAIL
N.T.S



1 GENERATOR DETAIL
N.T.S

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

ISSUE:	DATE
ISSUED FOR BID	12/01/22
REVISIONS:	

PROJ NUMBER	ENG/ARCH	PROJ MGR	CADD	COUNTY	MUNICIPALITY
0020.22-0080	SW	AV	SW	SHIAWASSEE	OWOSSO

CITY OF OWOSSO
JUNIPER WELL HOUSE DESIGN
Juniper Street
Owosso, MI 48867

ELECTRICAL DETAILS & SCHEDULES

SHEET E-5