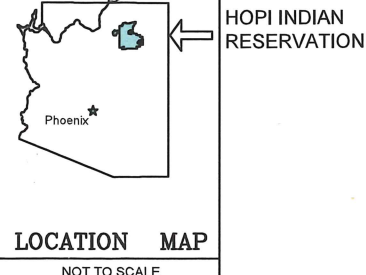
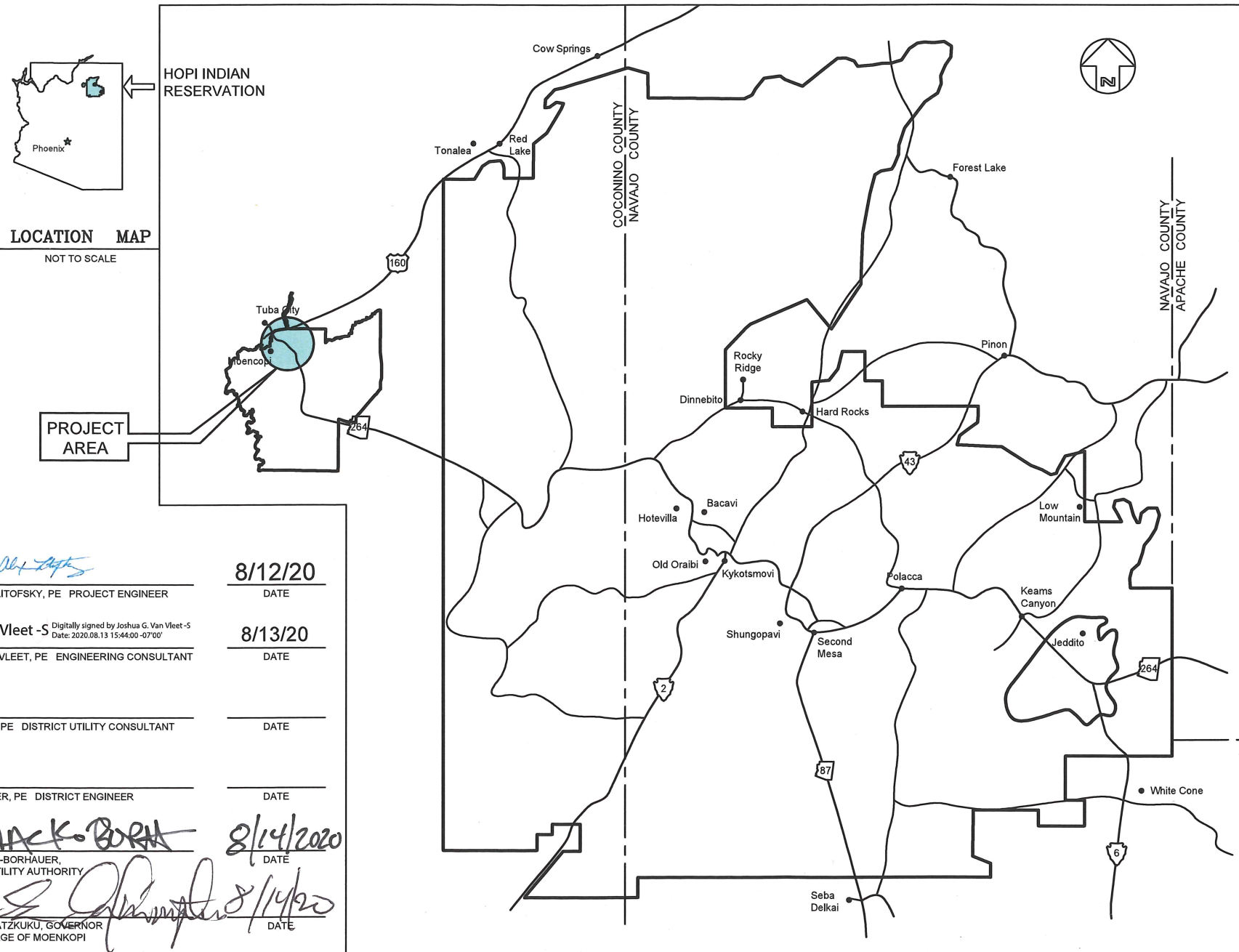


INDIAN HEALTH SERVICE SANITATION FACILITIES CONSTRUCTION UPPER MOENKOPI - NEW N-AQUIFER WELL CONNECTION HOPI INDIAN RESERVATION COCONINO COUNTY, ARIZONA

A COOPERATIVE PROJECT BETWEEN
THE INDIAN HEALTH SERVICE AND THE HOPI TRIBE
PROJECT NO. PH 15-U77 / EA 02-20



PROJECT AREA

PREPARED BY: Alexandra Litofsky 8/12/20
ALEXANDRA LITOFSKY, PE PROJECT ENGINEER DATE

APPROVED BY: Joshua G. Van Vleet 8/13/20
Joshua G. Van Vleet -S Digitally signed by Joshua G. Van Vleet -S
Date: 2020.08.13 15:44:00 -07'00' JOSHUA VAN VLEET, PE ENGINEERING CONSULTANT DATE

APPROVED BY: _____ DATE

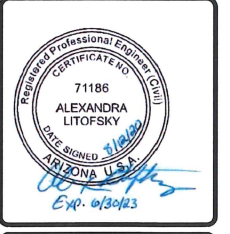
APPROVED BY: _____ DATE

APPROVED BY: KY MACKT 8/14/20
KY MACKT, PE DISTRICT UTILITY CONSULTANT DATE

APPROVED BY: Leroy Sumatzkuku 8/14/20
LEROY SUMATZKUKU, GOVERNOR
UPPER VILLAGE OF MOENKOPI DATE

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34	C-518	WELL INSTALLATION
35	C-519	PITLESS UNIT
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DATE	REVISIONS	INT.



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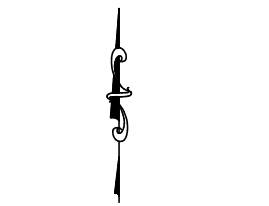
THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
COVER-TITLE-TABLE OF CONTENTS
PH 15-U77

FILE NAME: U77-0-57COVER
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

GENERAL LEGEND

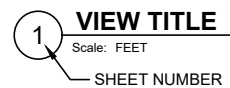
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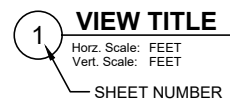
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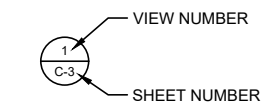
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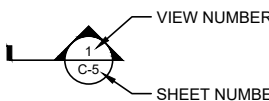
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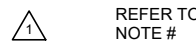
DRAWING TITLE WITH HORIZONTAL AND VERTICAL SCALE



CALL OUT BUBBLE



SECTION MARK



REFERS TO NOTE LOCATED ON SAME SHEET



CUT LINE

GENERAL NOTES:

DRAWINGS ARE SUPPLEMENTED BY A SEPARATE SET OF SPECIFICATION DOCUMENTS. ANY CHANGES TO CONSTRUCTION METHODS OR MATERIALS SHALL BE APPROVED IN ADVANCE BY THE RESPONSIBLE REGISTERED PROFESSIONAL.

AS-BUILT DRAWINGS:

CONTRACTOR SHALL MAINTAIN IN A SAFE PLACE AT THE SITE ONE PRINTED RECORD COPY OF ALL DRAWINGS, SPECIFICATIONS, ADDENDA, CHANGE ORDERS, WORK CHANGE DIRECTIVES, FIELD ORDERS, WRITTEN INTERPRETATIONS AND CLARIFICATIONS, AND APPROVED SHOP DRAWINGS. CONTRACTOR SHALL KEEP SUCH RECORD DOCUMENTS IN GOOD ORDER AND ANNOTATE THEM TO SHOW CHANGES MADE DURING CONSTRUCTION. THESE RECORD DOCUMENTS, TOGETHER WITH ALL APPROVED SAMPLES, WILL BE AVAILABLE TO ENGINEER FOR REFERENCE. UPON COMPLETION OF THE WORK, CONTRACTOR SHALL DELIVER THESE RECORD DOCUMENTS TO ENGINEER.

PRODUCT OPTIONS/SUBSTITUTIONS:

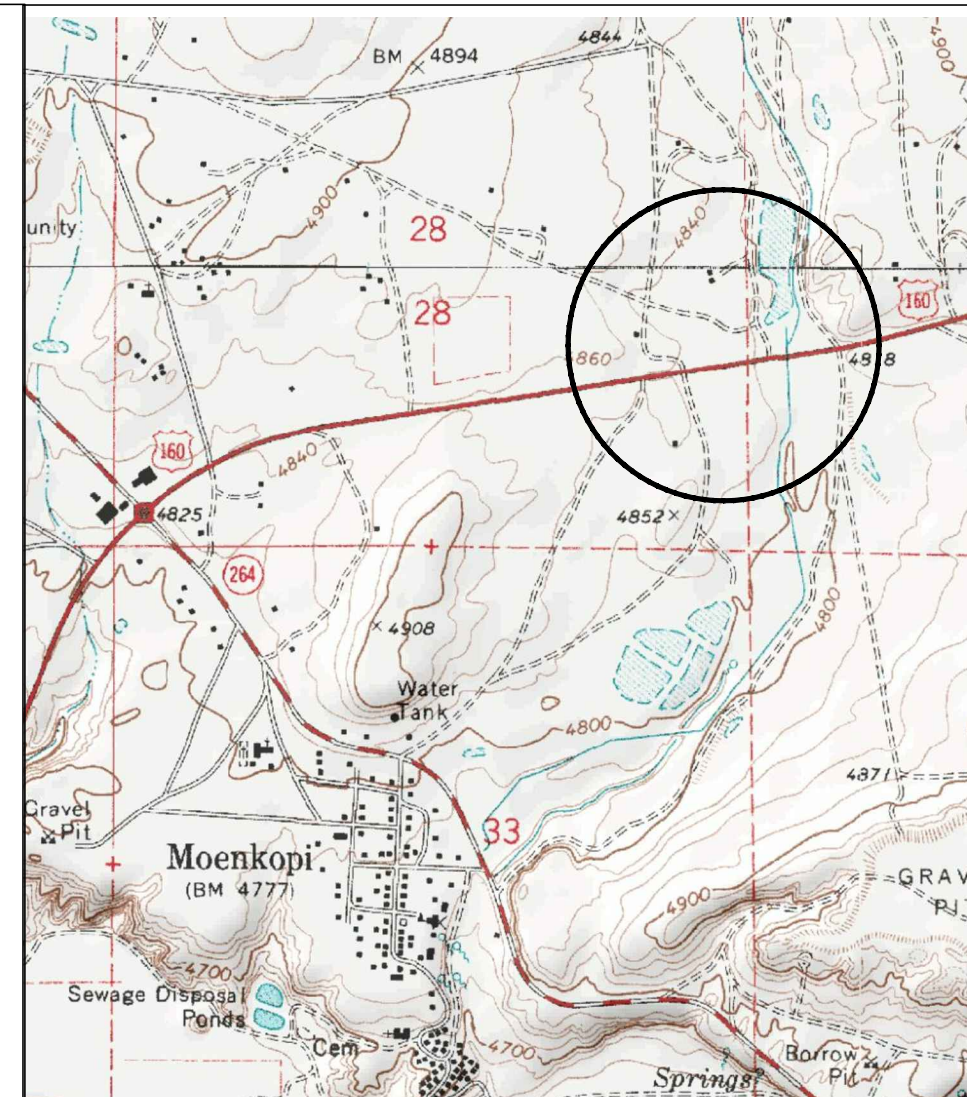
"OR APPROVED EQUAL" IS ALWAYS IMPLIED AFTER A BRAND NAME, PATENTED PROCESS OR CATALOG NUMBER. ANY BRAND OR PROCESS APPROVED BY THE RESPONSIBLE REGISTERED PROFESSIONAL MAY BE SUBSTITUTED. THE ONLY EXCEPTION IS WHERE NO SUBSTITUTION IS SPECIFIED.

TECHNICAL PROVISIONS:

- GENERAL CONDITIONS
 SECTION 01 - TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES
 SECTION 02 - CAST-IN-PLACE CONCRETE
 SECTION 04 - WATER TRANSMISSION AND DISTRIBUTION MAIN
 SECTION 11 - ROADWAY, RAILROAD, AND SPECIAL UTILITY CROSSINGS
 SECTION 60 - CHAIN LINK FENCING
 MODIFIED TP-10 - WELL PITLESS UNIT
 MODIFIED TP-42 - PUMP HOUSE: SITE
 MODIFIED TP-43 - PUMP HOUSE: STRUCTURAL
 MODIFIED TP-44 - PUMP HOUSE: MECHANICAL
 MODIFIED TP-45 - ELECTRICAL AND CONTROL

CLEARANCES:

- HOPI TRIBE. (2015). "HOPI TRIBAL COUNCIL RESOLUTION H-079-2015." HOPI TRIBE. KYKOTSMOVI, AZ.
 INDIAN HEALTH SERVICE, THE VILLAGE OF UPPER MOENKOPI, AND THE HOPI TRIBE. (2015). "MEMORANDUM OF AGREEMENT PROJECT NO. PH 15-U77 PUBLIC LAW 86-121." INDIAN HEALTH SERVICE. PHOENIX, AZ.
 INDIAN HEALTH SERVICE. (2018). "AMENDMENT NO. 1 TO THE PROJECT SUMMARY FOR INDIAN HEALTH SERVICE (IHS) PROJECT PH 15-U77, HOPI INDIAN RESERVATION." INDIAN HEALTH SERVICE. PHOENIX, AZ.
 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY. (2015). "INTERAGENCY AGREEMENT/AMENDMENT DW-75-95878901-0." US ENVIRONMENTAL PROTECTION AGENCY. SEATTLE, WA.
 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY. (2018). "INTERAGENCY AGREEMENT/AMENDMENT DW-75-95878901-2." US ENVIRONMENTAL PROTECTION AGENCY. SEATTLE, WA.
 JACOBS, D. (2018). "SHPO CONSULTATION FOR PROPOSED MUNICIPAL WATER SUPPLY PROJECT IHS PROJECT PH 15-U77." ARIZONA STATE HISTORIC PRESERVATION OFFICE. PHOENIX, AZ.
 YEATTS, M. (2018). "A CULTURAL RESOURCES INVENTORY OF A MUNICIPAL WATER SUPPLY PROJECT FOR UPPER MOENKOPI VILLAGE, IHS PROJECT PH 15-U77 (HCPO-2017-033)." HOPI CULTURAL PRESERVATION OFFICE. KYKOTSMOVI, AZ.
 SAHME, D. AND HONANI, R. (2018). "THREATENED AND ENDANGERED VEGETATION SPECIES SURVEY." HOPI OFFICE OF RANGE MANAGEMENT/LAND OPERATIONS. KYKOTSMOVI, AZ.



S11, S14, T28N, R18E, GILA-SALT RIVER MERIDIAN

VICINITY MAP

SCALE: Not To Scale

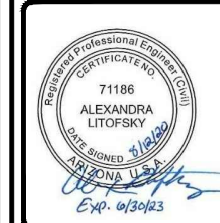
CLEARANCES:

TALAYUMPTWEA, D. (2018). "BIOLOGICAL EVALUATION REPORT #002-18: INDIAN HEALTH SERVICE OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING PROJECT #PH 15-U77 TWO (2) MUNICIPAL SUPPLY WELLS, WATER MAIN, AND PUMP HOUSE LOCATED IN PASTURE CANYON AND UPPER VILLAGE OF MOENKOPI, ARIZONA." HOPI WILDLIFE & ECOSYSTEMS MANAGEMENT PROGRAM. KYKOTSMOVI, AZ.

REFERENCES:

- INDIAN HEALTH SERVICE. (2015). "PROJECT SUMMARY NEW UPPER MOENKOPI N-AQUIFER WELL CONSTRUCTION PROJECT NO. PH 15-U77 PUBLIC LAW 86-121." INDIAN HEALTH SERVICE. PHOENIX, AZ.
 DANIEL B. STEPHENS & ASSOCIATES, INC. (2017). "HYDROGEOLOGIC STUDY UPPER VILLAGE OF MOENKOPI." DANIEL B. STEPHENS & ASSOCIATES, INC. ALBUQUERQUE, NM.
 DANIEL B. STEPHENS & ASSOCIATES, INC. (2019). "WELL INSTALLATION REPORT WELL 5, UPPER VILLAGE OF MOENKOPI." DANIEL B. STEPHENS & ASSOCIATES, INC. ALBUQUERQUE, NM.

INT.	DATE	REVISIONS



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THE HOPI TRIBE UPPER MOENKOPI - COCONINO COUNTY, ARIZONA NEW N-AQUIFER WELL CONNECTION GENERAL LEGEND PH 15-U77	FILE NAME: UMUN-G-STLGD	DATE: 04/22/2019
	EA NUMBER: 02-20	DATE: _____
	PROJ ENG: ALEXANDRA LITOFSKY	DATE: _____
DRAWN BY: _____	CHECKED BY: _____	APPROVED BY: _____

PROJECT SCHEMATIC, SCOPE OF WORK & DESIGN CRITERIA

SCOPE OF WORK

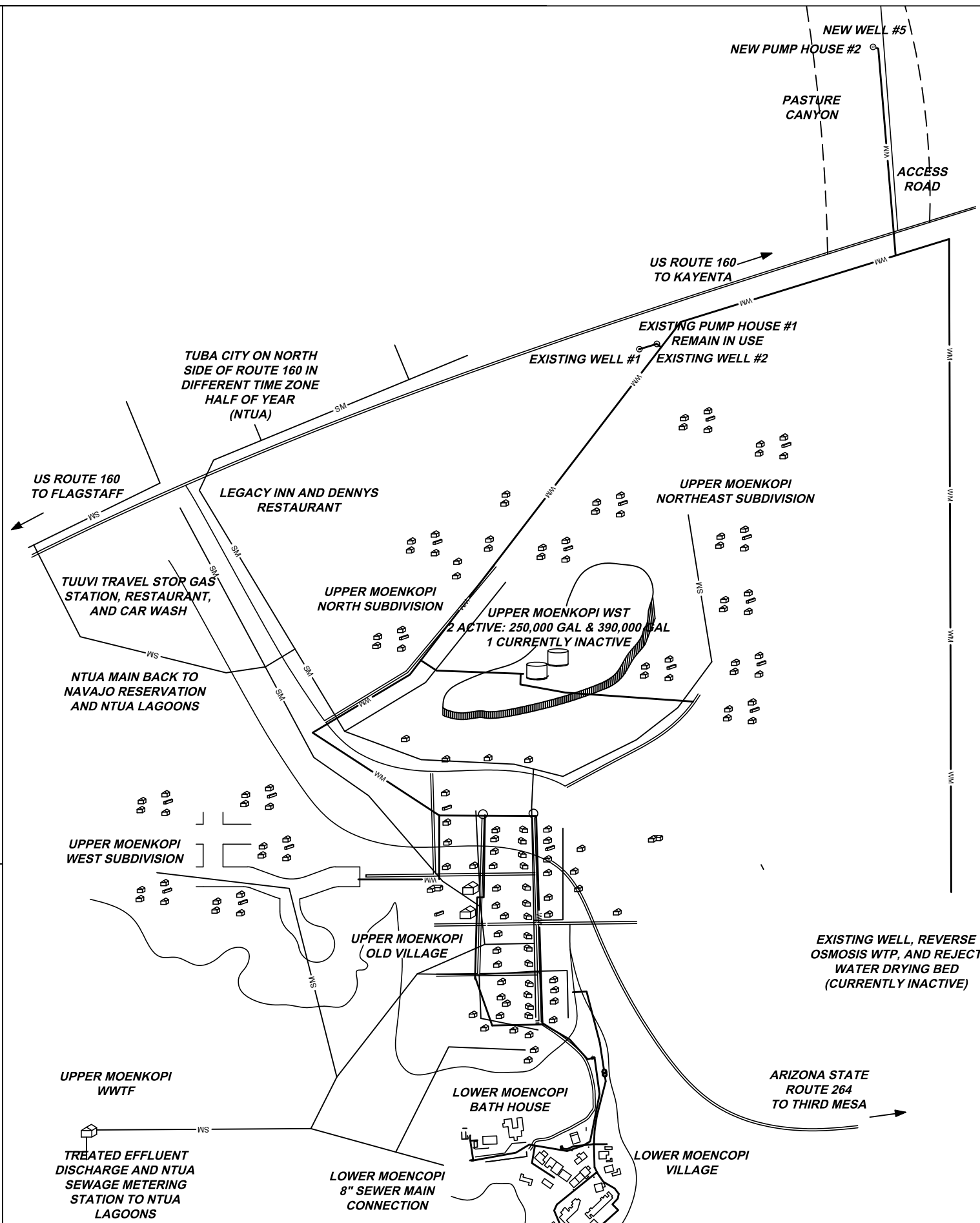
1. INSTALL
 - 1.1. 2-INCH DROP PIPE, SUBMERSIBLE PUMP AND MOTOR
 - 1.2. PITLESS WELL ADAPTER
2. CONSTRUCT NEW WATER MAIN CONNECTING NEW WELL TO EXISTING MAIN
 - 2.1. INSTALL 6-INCH TEE AND VALVES ON EXISTING WATER MAIN
 - 2.2. INSTALL 6-INCH WATER MAIN
 - 2.3. CONSTRUCT ROAD BORE UNDER US HIGHWAY 160
 - 2.4. CONSTRUCT CROSSING UNDER NAVAJO TRIBAL UTILITY AUTHORITY (NTUA) GAS LINE
 - 2.5. CONSTRUCT CROSSING UNDER NTUA WATER LINE
 - 2.6. INSTALL 6-INCH TEE AND VALVES FOR FUTURE INTERCONNECTION TO NTUA WATER LINE
 - 2.7. INSTALL 6-INCH TO 4-INCH REDUCER
 - 2.8. INSTALL 4-INCH WATER MAIN TO PUMP HOUSE SITE
 - 2.9. INSTALL 4-INCH WATER MAIN FROM PUMP HOUSE TO PITLESS UNIT
3. CONSTRUCT TWO-ROOM PUMP HOUSE AND CHLORINATION FACILITY
 - 3.1. PREPARE SITE
 - 3.2. CONSTRUCT WELL PAD
 - 3.3. CONSTRUCT ACCESS DRIVEWAY
 - 3.4. CONSTRUCT CONCRETE TWO-ROOM BUILDING
 - 3.5. CONSTRUCT DRAINFIELD
 - 3.6. INSTALL PIPING AND MECHANICAL REQUIREMENTS
 - 3.7. INSTALL 2-INCH TRANSDUCER CONDUIT
 - 3.8. CONSTRUCT CONCRETE TRANSFORMER PAD
 - 3.9. INSTALL SWITCHING CABINET PAD
 - 3.10. DESIGN AND INSTALL ELECTRICAL AND CONTROL SYSTEMS
 - 3.11. CONSTRUCT ENCLOSURE FENCING AND ACCESS GATE
4. FULFILL ARIZONA PUBLIC SERVICE (APS) AGREEMENT:
 - 4.1. EXCAVATE TRENCH FOR APS UNDERGROUND POWER LINE EXTENSION
 - 4.2. PROVIDE AND INSTALL CONDUIT FOR UNDERGROUND POWER LINE AND THREE-PHASE TRANSFORMER PAD
 - 4.3. INSTALL SWITCHING CABINET PAD PROVIDED BY APS
 - 4.1. APS TO INSTALL POWER POLES AND OVERHEAD ELECTRICAL POWER LINE

DESIGN CRITERIA

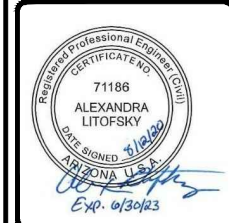
- 10 STATES STANDARDS
- NAVAJO AREA IHS STANDARDS
- ADOT GUIDELINE FOR ACCOMMODATING UTILITIES ON HIGHWAY RIGHTS-OF-WAY
- NTUA TECHNICAL SPECIFICATIONS FOR MATERIALS AND WORKMANSHIP FOR NATURAL GAS FACILITIES
- APS LINE EXTENSION AGREEMENT AND TRENCHING AGREEMENT

WATER QUALITY DATA			
Parameter	Standard	Result	Units
Fe	4.0	0.15	mg/L
Mg	-	4.2	mg/L
As	0.010	0.0027	mg/L
Ca	-	15	mg/L
Alkalinity	-	86.8	mg/L
Hardness	-	56	mg/L
TDS	500	140	mg/L
pH	5.0-9.0	7.97	mg/L

FROM 2019 WELL INSTALLATION REPORT
SAMPLES COLLECTED NOVEMBER 20, 2018



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THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
PROJECT SCHEMATIC, SCOPE OF WORK & DESIGN CRITERIA
PH 15-U77

FILE NAME:	UMUN-G-STSCHEM
EA NUMBER:	02-20
PROJ ENG:	ALEXANDRA LITOFSKY
DRAWN BY:	DATE: 04/22/2019
CHECKED BY:	DATE: _____
APPROVED BY:	DATE: _____

SYSTEM OPERATION

SYSTEM OPERATION

MOENKOPI UTILITY AUTHORITY OPERATORS WILL BE CONTINUING TO MANUALLY OPERATE EXISTING WELLS #1 AND #3.

OPERATORS WILL ALSO MANUALLY OPERATE NEW PASTURE CANYON WELL #5 ON WEEKDAYS. THE PUMP WILL BE TURNED ON WHEN THE WATER LEVEL OF THE STORAGE TANKS HAS DROPPED 5 FT AND TURNED OFF WHEN THE TANKS ARE FULL.

OVER THE WEEKEND OR AS NEEDED WHEN THE OPERATORS ARE UNAVAILABLE, OPERATORS WILL SET WELL #5 TO AUTOMATIC. THE TRANSDUCER WILL SIGNAL THE PUMP TO TURN ON AUTOMATICALLY WHEN THE TANK LEVEL HAS DROPPED 5 FT AND THE TIMER WILL SHUT THE PUMP OFF BEFORE THE TANKS OVERFLOW.

DISINFECTION

DISINFECTION METHOD 12.5% SODIUM HYPOCHLORITE
ESTIMATED CHLORINE DEMAND
METERING PUMP

WATER DEMAND

POPULATION

- 213 HOMES / 900 PEOPLE, WITH PLANS FOR ADDITIONAL 10 HUD HOMES
- 11 BUSINESSES

PROJECTED DEMAND

ASSUME:

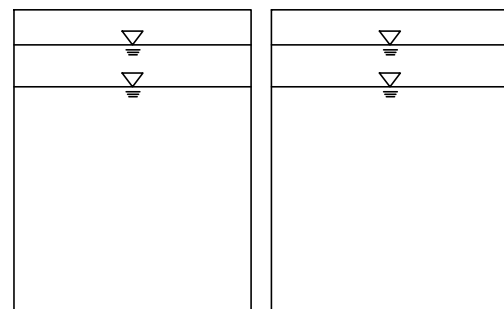
- 1.5% ANNUAL GROWTH IN RESIDENTIAL DEMAND
- USE AVERAGE DAILY DEMAND AFTER IMPLEMENTATION OF METERED RATES (2018-2019):
 - RESIDENTIAL: 30,000 GAL
 - COMMERCIAL: 18,000 GAL
- PEAK DAY IS ESTIMATED TO BE TWICE ANNUAL AVERAGE DAILY DEMAND
- TOTAL DEVELOPED GROUNDWATER SOURCE CAPACITY IS SUM OF SUSTAINABLE WELL PRODUCTION OVER 24 HOURS

PROJECTED DEMAND		
YEAR	2020	2040
RESIDENTIAL DEMAND (GPD)	30,000	41,000
TOTAL DEMAND (GPD)	48,000	59,000
RESIDENTIAL PEAK DAY DEMAND (GPD)	60,000	96,000
TOTAL PEAK DAY DEMAND (GPD)	83,000	117,000

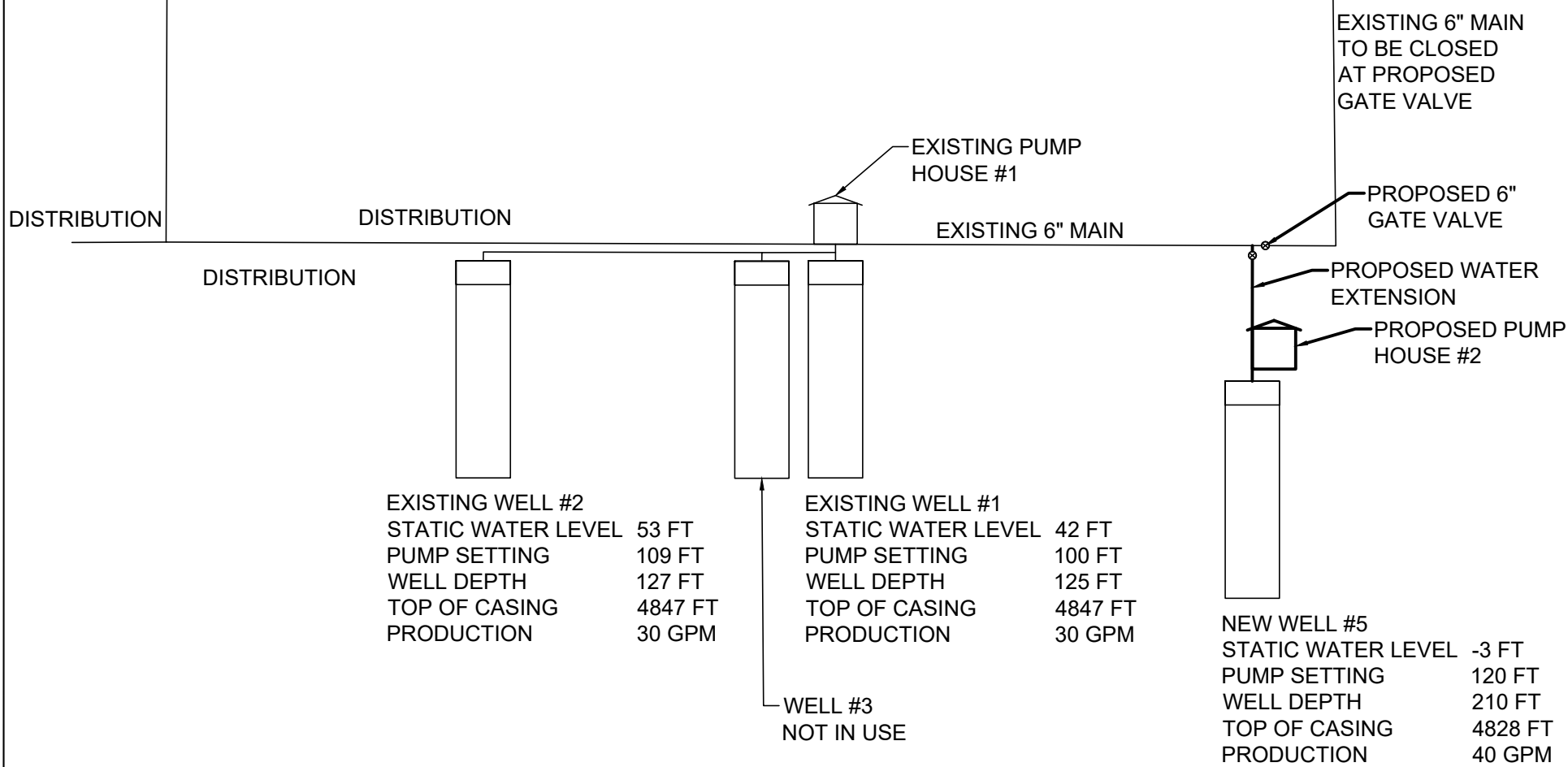
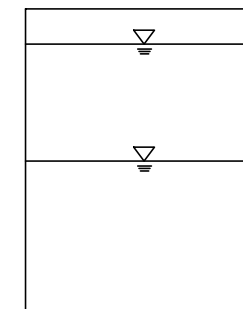
PROJECTED SUPPLY

SUPPLY	
CURRENT SUPPLY - WELLS #1 & #2 (GPD)	65,000
CURRENT SUPPLY WITH ONE WELL OUT OF SERVICE (GPD)	32,000
SUPPLY WITH NEW WELL - WELLS #1, #2, & #5 (GPD)	123,000
SUPPLY WITH NEW WELL AND ONE WELL OUT OF SERVICE (GPD)	90,000
SUPPLY WITH NEW WELL AND FUTURE WELL - WELLS #1, #2, #5, & #6 (PENDING FUNDING) (GPD)	180,000
SUPPLY WITH NEW WELL AND FUTURE WELL (PENDING FUNDING) WITH ONE WELL OUT OF SERVICE (GPD)	147,000

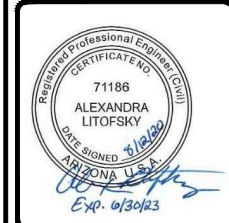
EXISTING WATER STORAGE TANKS
BASE ELEVATION 4903 FT
TANK OVERFLOW 38 FT
TANK 1 250,000 GAL
TANK 2 390,000 GAL
TOTAL STORAGE 640,000 GAL



EXISTING REVERSE OSMOSIS WATER TREATMENT PLANT
NOT IN USE
BASE ELEVATION 4953 FT
TANK OVERFLOW 4 FT



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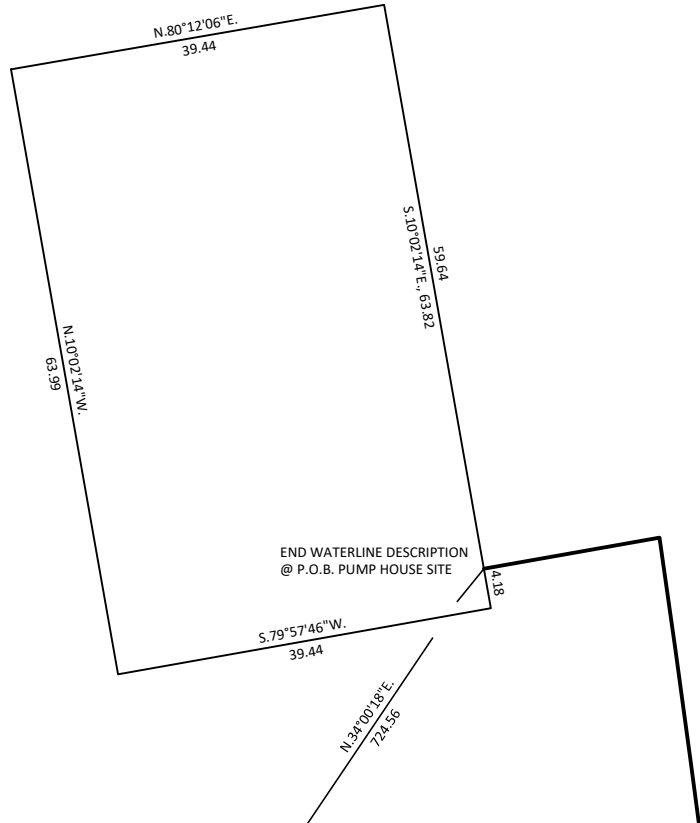
THE HOPI TRIBE
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NEW N-AQUIFER WELL CONNECTION
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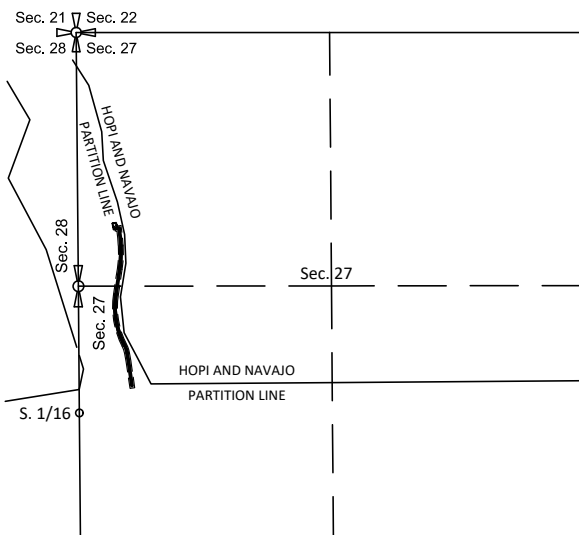
DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

MAP OF PROPOSED LOCATION

FENCED PUMP HOUSE SITE



VICINITY SKETCH



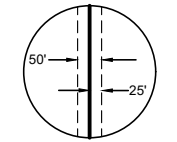
EASEMENT DESCRIPTION FOR UPPER MOENKOPI:

AN EASEMENT FOR WATER PURPOSES, ON, OVER, UNDER, AND ACROSS A PORTION OF SECTION 27, TOWNSHIP 32 NORTH, RANGE 11 EAST OF THE GILA AND SALT RIVER MERIDIAN, SITUATED ON THE HOPI INDIAN RESERVATION, BUREAU OF INDIAN AFFAIRS, COCONINO COUNTY, STATE OF ARIZONA, BEING A PORTION ON FILE WITH THE DEPARTMENT OF HEALTH AND HUMAN SERVICES, INDIAN HEALTH SERVICE, ENTITLED NEW N-AQUIFER WELL CONNECTION, PROJECT NO. PH 15-U77 DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHICH BEARS N.62°40'29"E., 617.80 FEET DISTANT FROM A BUREAU OF LAND MANAGEMENT STAINLESS STEEL POST AND BRASS CAP MONUMENT RECOVERED AT THE S.1/16 SECTION CORNER OF SECTIONS 27 AND 28, TOWNSHIP 32 NORTH, RANGE 11 EAST OF THE GILA AND SALT RIVER MERIDIAN;
 THENCE N.8°18'26"W., 259.09 FEET TO A POINT;
 THENCE N.10°07'21"W., 85.02 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE LEFT;
 THENCE ALONG SAID CURVE TO THE LEFT ON A RADIUS OF 283.43 FEET, AN ARC DISTANCE OF 85.35 FEET, THROUGH A CENTRAL ANGLE OF 17°15'15" WITH A CHORD BEARING AND DISTANCE OF N18°44'59"W, 85.03 FEET TO THE POINT OF REVERSE CURVE OF A CURVE TO THE RIGHT;
 THENCE ALONG SAID CURVE TO THE RIGHT ON A RADIUS OF 872.04 FEET, AND ARC DISTANCE OF 545.56 FEET, THROUGH A CENTRAL ANGLE OF 35°50'41" WITH A CHORD BEARING AND DISTANCE OF N9°27'15"W, 536.70 FEET TO THE POINT OF TANGENCY OF SAID CURVE TO THE RIGHT;
 THENCE N.8°28'05"E., 267.26 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE LEFT;
 THENCE ALONG SAID CURVE TO THE LEFT ON A RADIUS OF 1169.52 FEET, AN ARC DISTANCE OF 241.16 FEET, THROUGH A CENTRAL ANGLE OF 11°48'52" WITH A CHORD BEARING AND DISTANCE OF N2°33'39"E, 240.73 FEET TO THE POINT OF TANGENCY OF SAID CURVE TO THE LEFT;
 THENCE N.3°20'47"W., 9.85 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE LEFT;
 THENCE ALONG SAID CURVE TO THE LEFT ON A RADIUS OF 2057.61, AN ARC DISTANCE OF 177.54 FEET, THROUGH A CENTRAL ANGLE OF 4°56'38" WITH A CHORD BEARING AND DISTANCE OF N5°49'06"W, 177.49 FEET TO A NON-TANGENT POINT;
 THENCE S.81°57'46"W., 18.57 FEET TO THE TERMINUS OF THIS WATER LINE EASEMENT ON THE EASTERLY BOUNDARY OF FENCED PUMP HOUSE SITE EASEMENT, DESCRIBED CONCURRENTLY WITH THIS WATERLINE EASEMENT, WHICH BEARS N.34°00'18"E., 724.56 FEET FROM A BUREAU OF LAND MANAGEMENT STAINLESS STEEL POST AND BRASS CAP MONUMENT RECOVERED AT THE 1/4 SECTION CORNER OF SECTIONS 27 AND 28;
 THE RIGHT-OF-WAY FOR THE WATER MAIN SHALL BE 50 FEET IN WIDTH (25 FEET EITHER SIDE OF THE DESCRIBED CENTER LINE AND 25 FEET AT THE FRONT AND 25 FEET AT THE END), APPROXIMATELY 1689.40 FEET IN LENGTH AND APPROXIMATELY 1.94 ACRES, MORE OR LESS.

FENCED PUMP HOUSE SITE:

BEGINNING AT THE TERMINUS OF THE ABOVE DESCRIBED WATER LINE EASEMENT, DESCRIBED CONCURRENTLY WITH THIS FENCED PUMP HOUSE SITE, WHICH BEARS N.34°00'18"E., 724.56 FEET FROM A BUREAU OF LAND MANAGEMENT STAINLESS STEEL POST AND BRASS CAP MONUMENT RECOVERED AT THE 1/4 SECTION CORNER OF SECTIONS 27 AND 28;
 THENCE S.10°02'14"E., 4.18 FEET TO THE SOUTHEASTERLY CORNER OF THE FENCED PUMP HOUSE SITE;
 THENCE S.79°57'46"W., 39.44 FEET TO THE SOUTHWESTERLY CORNER OF THE FENCED PUMP HOUSE SITE;
 THENCE N.10°02'14"W, 63.99 FEET TO THE NORTHWESTERLY CORNER OF THE FENCED PUMP HOUSE SITE;
 THENCE N.80°12'06"E., 39.44 FEET TO THE NORTHEASTERLY CORNER OF THE FENCED PUMP HOUSE SITE;
 THENCE S.10°02'14"E., 59.64 FEET TO THE POINT OF BEGINNING, SAID PUMP HOUSE SITE CONTAINS 0.06 ACRES MORE OR LESS.



TYPICAL OPERATION AND MAINTENANCE EASEMENT

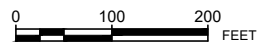
SURVEYOR'S AFFIDAVIT

STATE OF ARIZONA
 COCONINO COUNTY

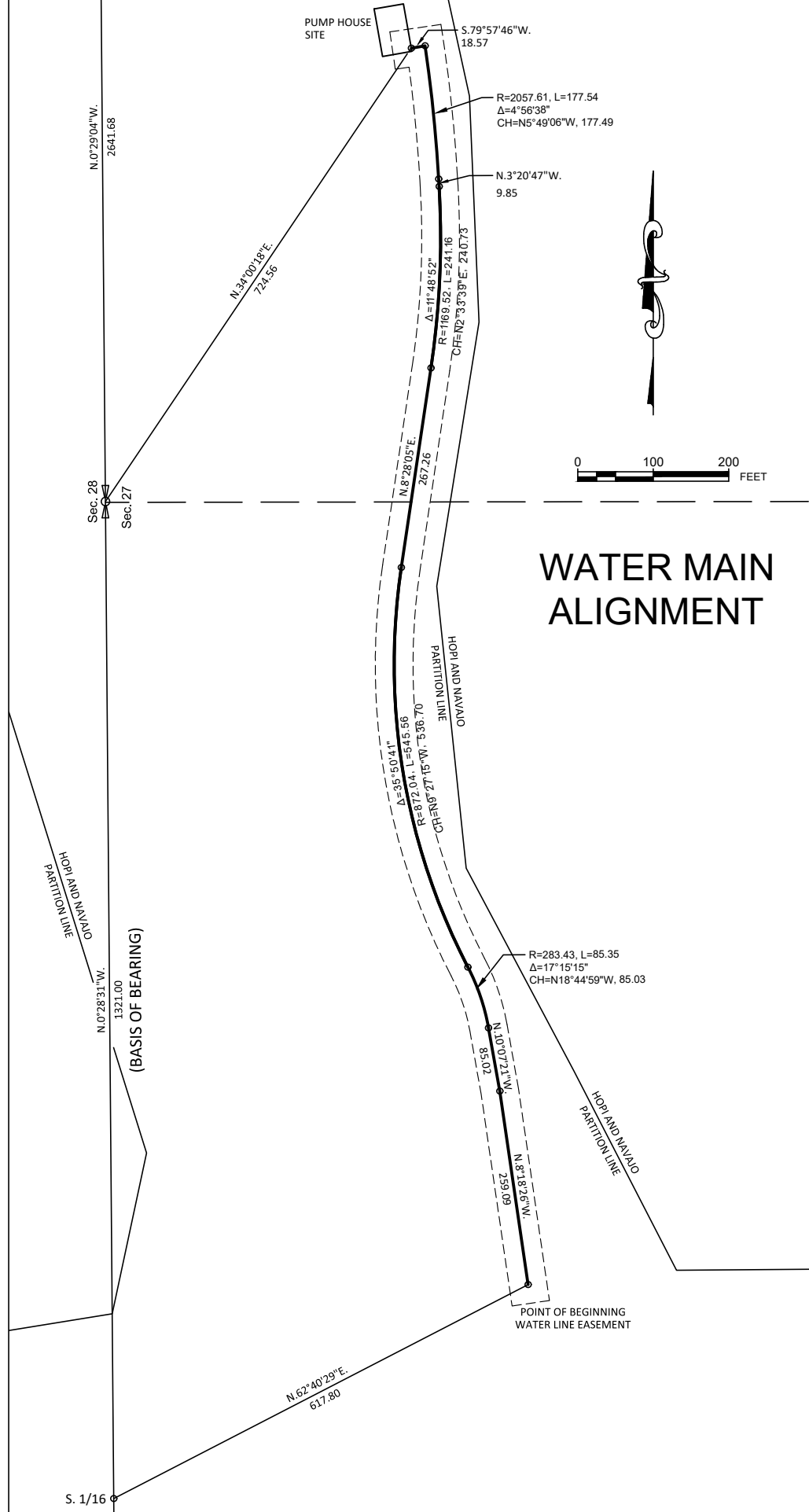
I HEREBY STATE THAT I AM A REGISTERED LAND SURVEYOR, RETAINED BY THE DEPARTMENT OF HEALTH AND HUMAN SERVICES, UNITED STATES PUBLIC HEALTH SERVICE, INDIAN HEALTH SERVICE; THAT THE SURVEY OF THE COMMUNITY UTILITY RIGHT-OF-WAY AS DESCRIBED AND SHOWN ON THIS MAP WAS CONDUCTED BY ME OR UNDER MY SUPERVISION ON BEHALF OF THE HOPI TRIBE, AND THAT SUCH SURVEY IS ACCURATELY REPRESENTED ON THIS MAP.

DAVID LEE, CFedS
 INDIAN HEALTH SERVICE
 OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING

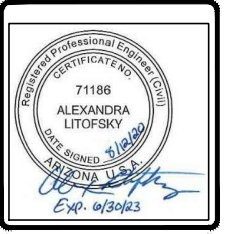
PUMP HOUSE SITE



WATER MAIN ALIGNMENT



DATE	REVISIONS



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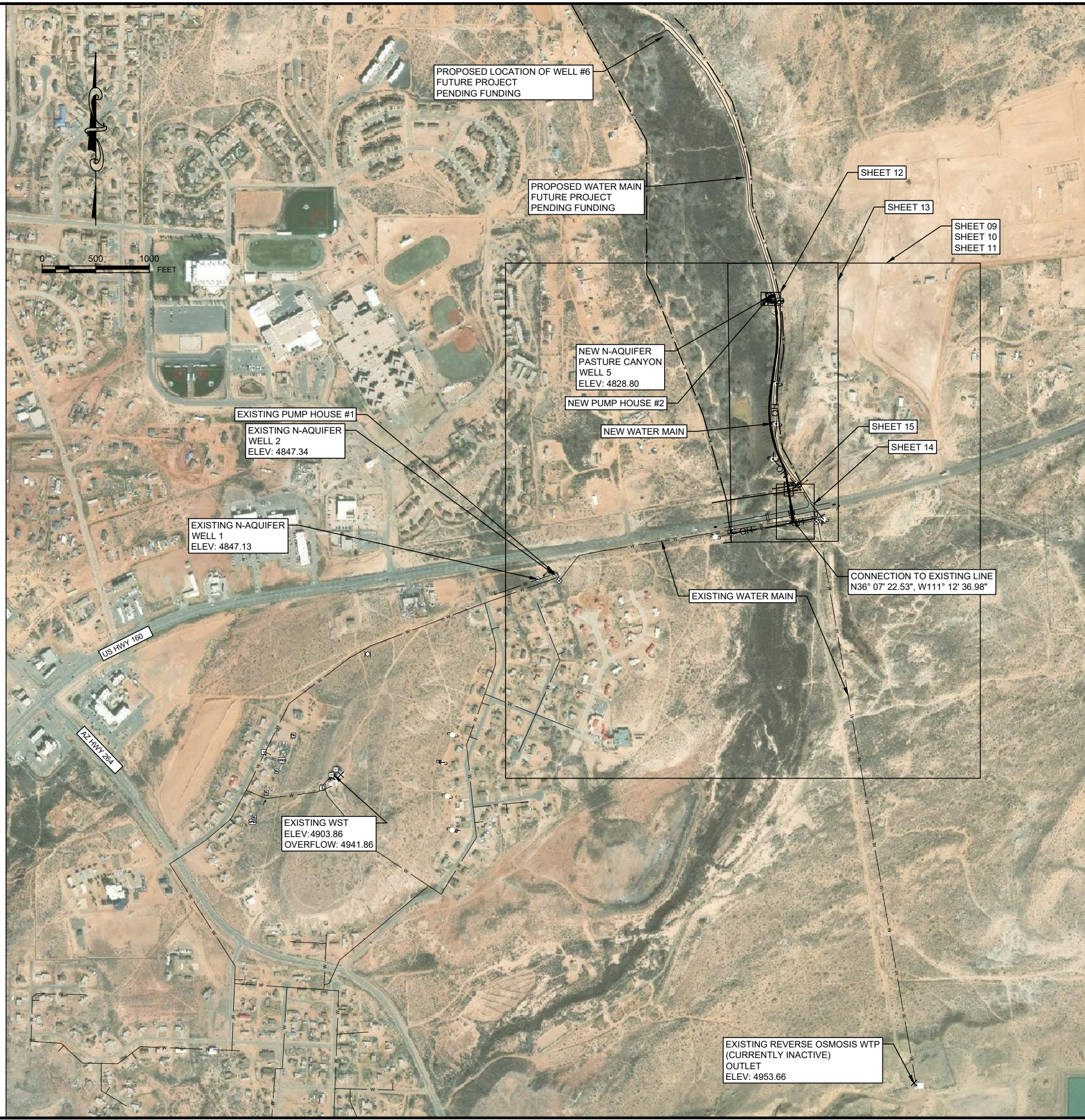


THE HOPI TRIBE
 UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
 NEW N-AQUIFER WELL CONNECTION
 MAP OF PROPOSED LOCATION
 PH 15-U77

FILE NAME: UMUN-V-STM0DI
 EA NUMBER: 02-20
 PROJ ENG: ALEXANDRA LITOPSKY

DRAWN BY: _____ DATE: 04/22/2019
 CHECKED BY: _____ DATE: _____
 APPROVED BY: _____ DATE: _____

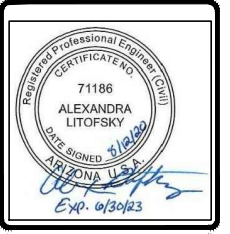
PROJECT OVERVIEW - SITE PLAN



MOENKOPI WELL #		PASTURE CANYON WELL 5
POWER UTILITY COMPANY		APS
DATE OF CONSTRUCTION	START	11/7/2018
	END	11/10/2018
CONTRACTOR	FINAL INSPECTION	12/20/2018
		STEWART BROTHERS
SURFACE ELEVATION		
BORE HOLE	DEPTH	0 TO 38 FT.
	SIZE	36 IN. DIA.
	DEPTH	38 TO 214 FT.
PITLESS UNIT	SIZE	14.75 IN. DIA.
	MAKE	
CASEING	MODEL	
	SIZE	16 IN. O.D.
SCREEN	TYPE	ASTM 138-B STEEL CONDUCTOR CASING
	LOCATION	0 TO 38 FT.
	SIZE	8.625 IN. O.D.
GRAVEL PACK GRADATION	TYPE	HSLA STEEL BLANK CASING
	LOCATION	3 FT. ABOVE GROUND TO 137 FT. AND 197 TO 207 FT.
	LENGTH	60 FT.
GROUT ENVELOPE DEPTH	LOCATION	137 TO 197 FT.
	TYPE	ROSCOE MOSS FULL FLO HSLA STEEL SHUTTER SCREEN
STATIC WATER LEVEL	SLOT SIZE	0.060 IN.
	DEPTH	8/12 SILICA SAND FILTER PACK
PUMP	DATE OF MEASUREMENT	BENTONITE 101 TO 117 FT.
	MAKE	ARTESIAN FLOW 3.0 FT. ABOVE GROUND SURFACE
DROP PIPE	MODEL	
	POWER	5 HP
	VOLTAGE	440-460 V
	PHASE	3
	FULL LOAD CURRENT	
	PUMPING RATE	40 GPM
	WATER LEVEL	103 FT. DRAWDOWN
	DEPTH SETTING OF PUMP	120 FT. BGS
	DEPTH OF WATER LEVEL MEASURING DEVICE	
	SIZE	
CHECK VALVES	TYPE OF SUBMERSIBLE CABLE	
	CABLE LENGTH	
CONTROLS	LOCATION	
	MODEL	
	TRANSducer	
	TIMER	

CONTRACTOR TO FILL OUT TABLE WITH AS-BUILT SET

DATE	REVISIONS	INT.



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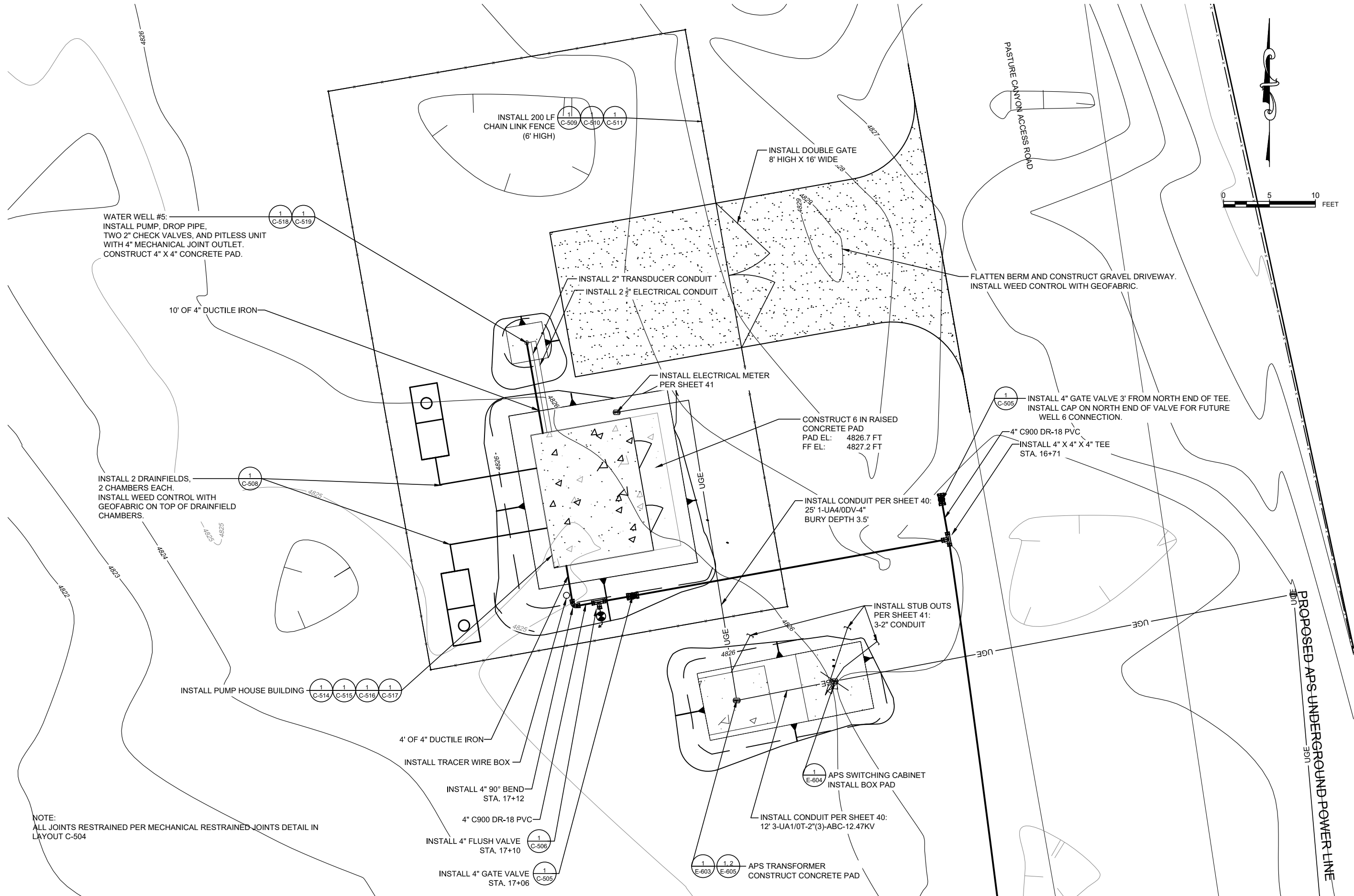


THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
PROJECT OVERVIEW - SITE PLAN
PH 15-U77

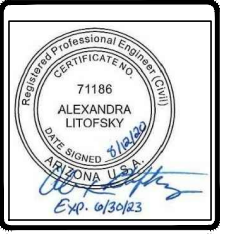
FILE NAME: UMUN-C-STPLAN-PRFL
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

PUMP HOUSE PLAN



DATE	REVISIONS	INT.



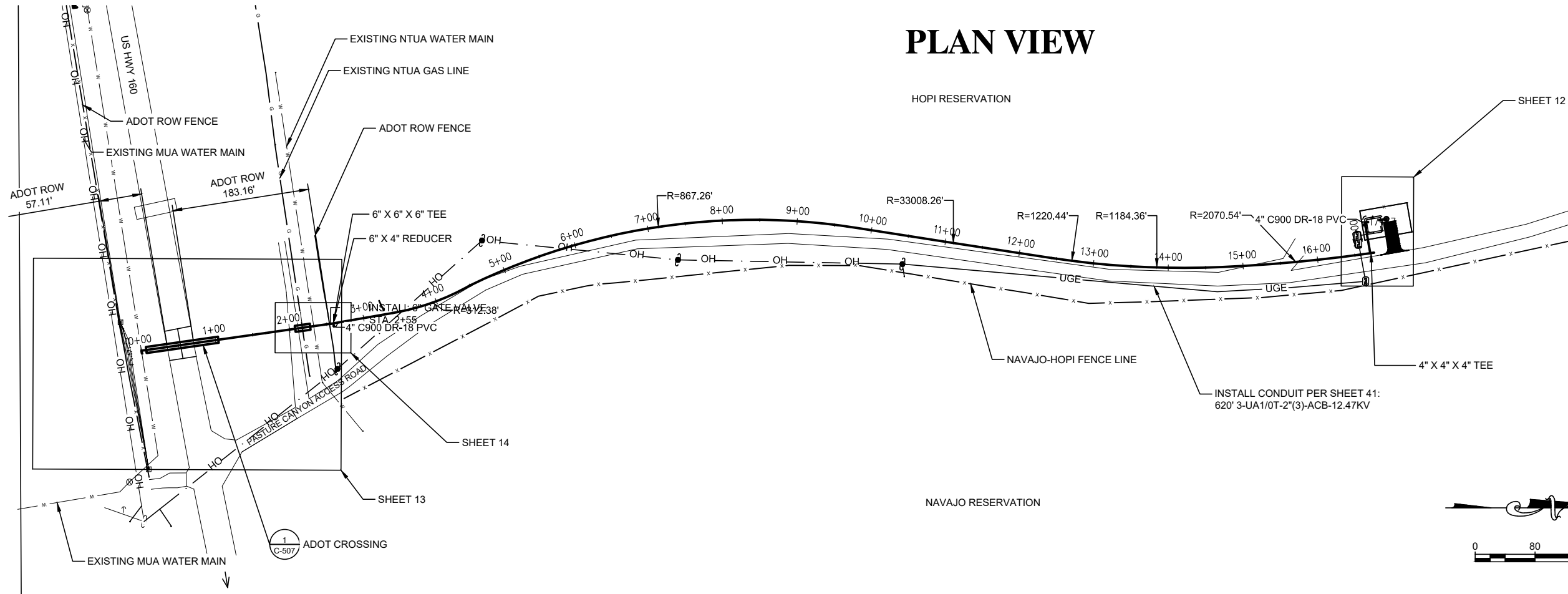
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THE HOPI TRIBE
 UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
 NEW N-AQUIFER WELL CONNECTION
 PUMP HOUSE PLAN
 PH 15-U77

FILE NAME: UMUN-C-STPLAN-PREL
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY
DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

PLAN VIEW

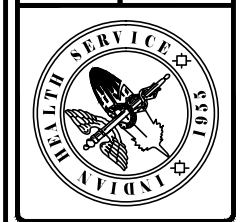


INT.	DATE	REVISIONS



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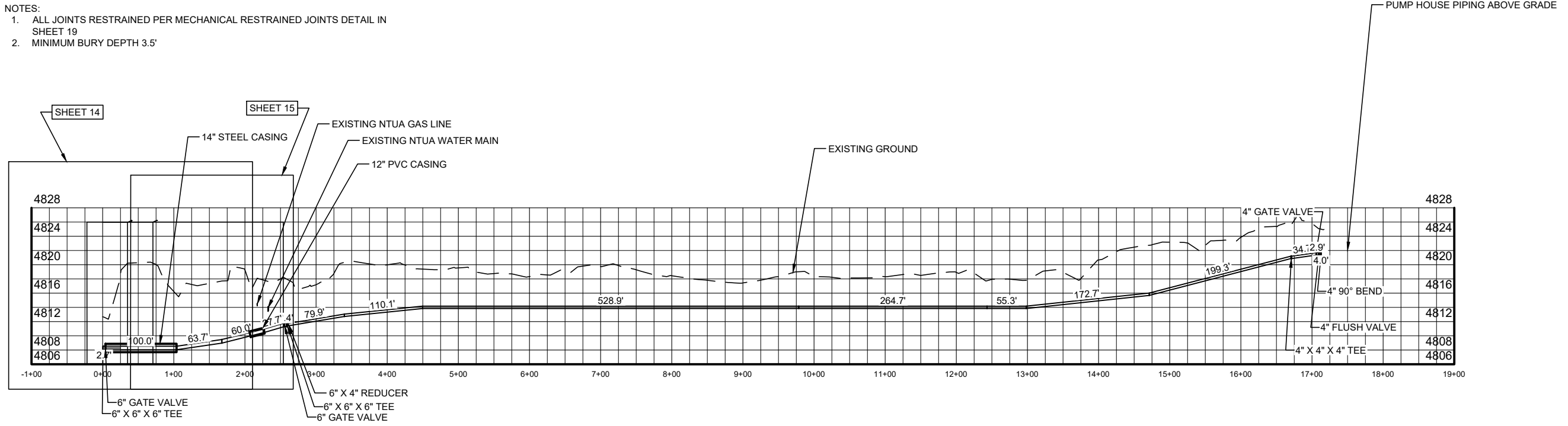


THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
PLAN AND PROFILE
PH 15-U77

FILE NAME: UMUN-C-STPLAN-PRFL
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

PROFILE



- NOTES:
1. ALL JOINTS RESTRAINED PER MECHANICAL RESTRAINED JOINTS DETAIL IN SHEET 19
 2. MINIMUM BURY DEPTH 3.5'

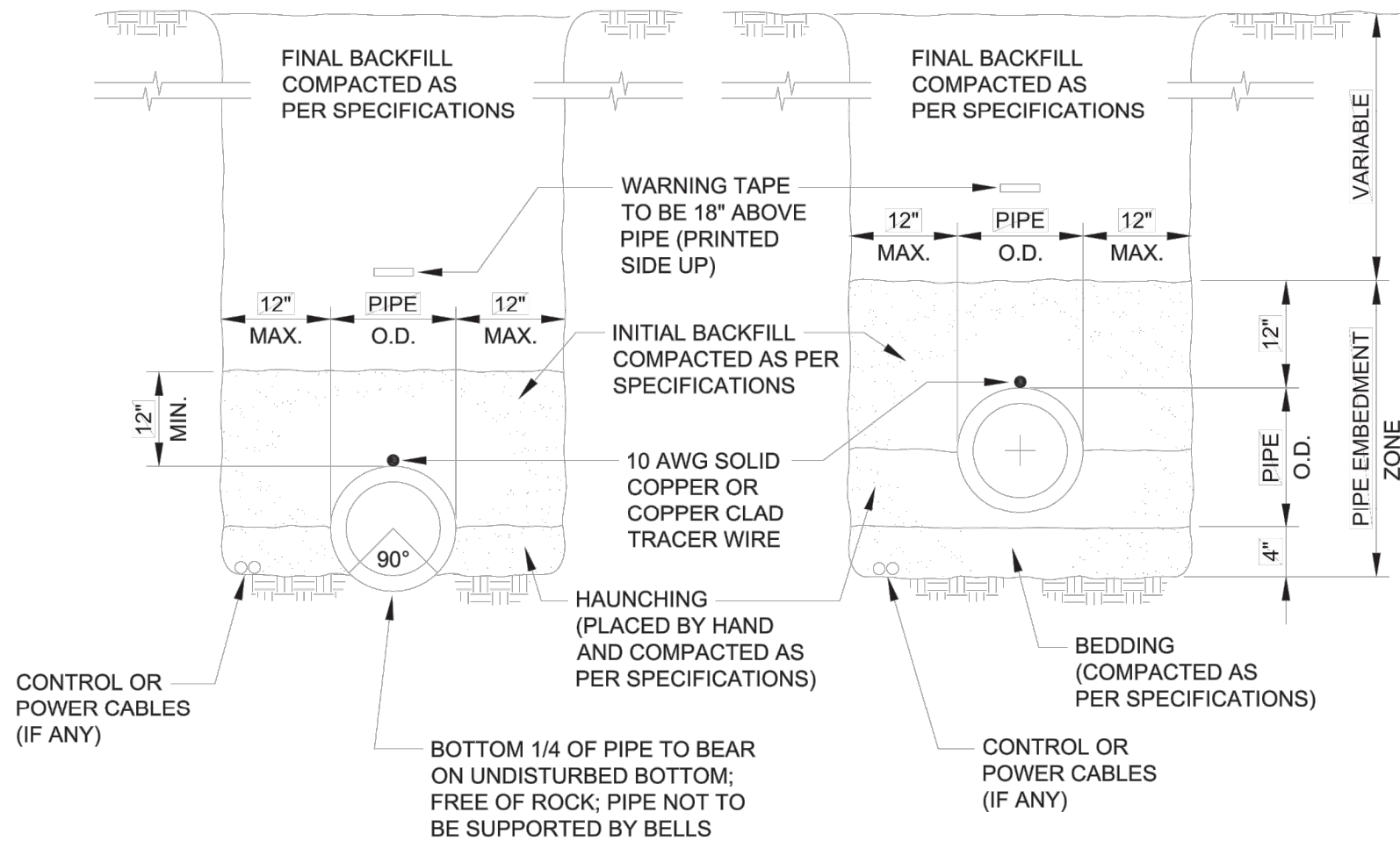
SCALE: H: 1" = 80', V: 1" = 8'

NOTES:

1. SPECIAL IMPORTED BEDDING AND HAUNCHING MATERIAL SHALL MEET THE CRITERIA OF THE UNIFIED SOILS CLASSIFICATION SYSTEM FOR GW, GP, SW OR SP SOILS.
2. ATTACH TRACER WIRE TO PIPE 3 TIMES PER 20' PIPE LENGTH, MINIMUM.
3. BEDDING, HAUNCHING AND BACKFILL SHALL BE COMPACTED AS INDICATED IN TP 01.11 AND TABLE IN TP 01.12 A.

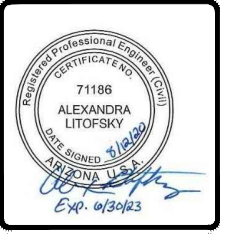
**RARE CONDITIONS
NOT REQUIRING
SPECIAL EMBEDMENT**

**CONDITIONS REQUIRING
SPECIAL EMBEDMENT
MATERIAL**



1A TYPICAL TRENCH SECTIONS
Scale: N.T.S.

DATE	REVISIONS	INIT.



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THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
TYPICAL TRENCH
PH 15-U77

FILE NAME: UMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

DATE	REVISIONS	INITIALS
11-14	UPDATED	
03-18	REVISED	L.B.
01-19	REVISED	L.T.S.
03-19	REVISED	C.G.



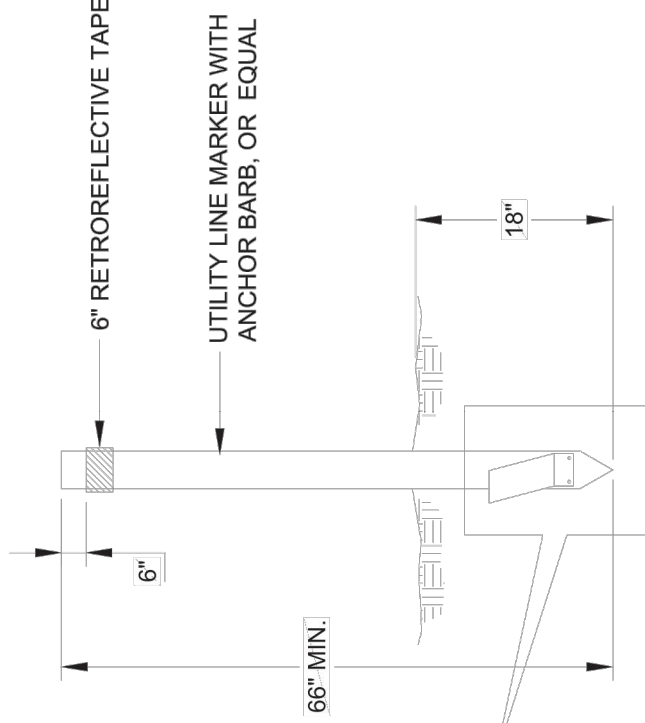
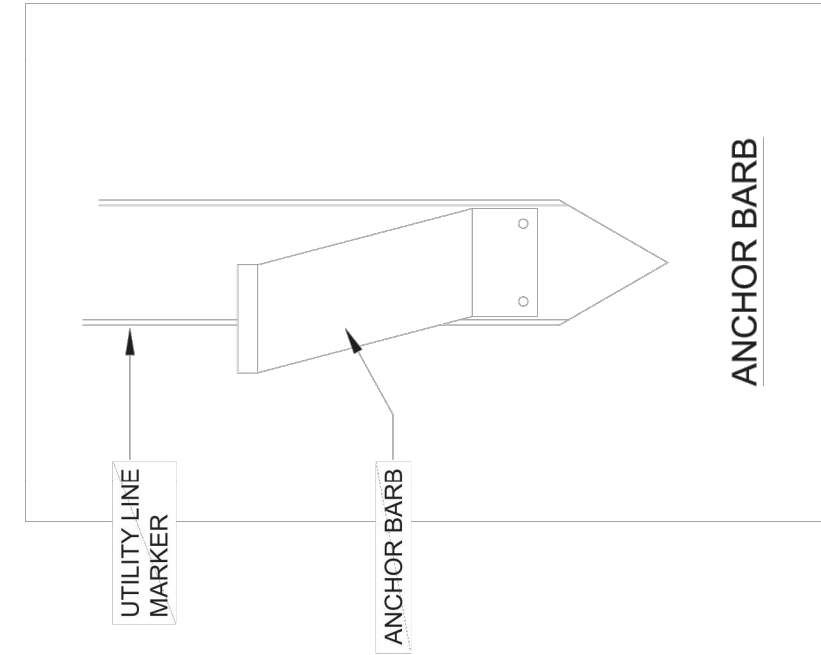
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PAO REVISED DETAILS
WATER - SEWER - MISC DETAILS
TYPICAL TRENCH SECTIONS

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

FILE NAME: REVISED MISC DRAWINGS
LAYOUT NAME: 1A
PROJ ENG: _____



- NOTES:
1. WATER MAIN MARKERS SHALL BE BLUE, 66" TALL MINIMUM, MARKED "CAUTION WATER PIPELINE".
 2. SEWER MAIN & SEWER FORCE MAIN MARKERS SHALL BE GREEN, 66" TALL MINIMUM, MARKED "CAUTION SEWER PIPELINE".
 3. UTILITY LINE MARKER SHALL BE INSTALLED WITHIN ROADWAY RIGHT-OF-WAYS.

1B UTILITY LINE MARKER

Scale: N.T.S.

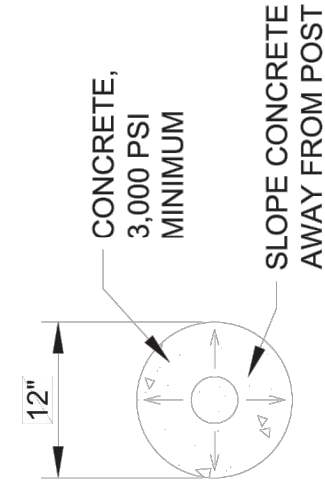
DATE	REVISIONS	INITIALS
12-14	UPDATED	
03-18	REVISED	L.B.
01-19	REVISED	L.T.S.



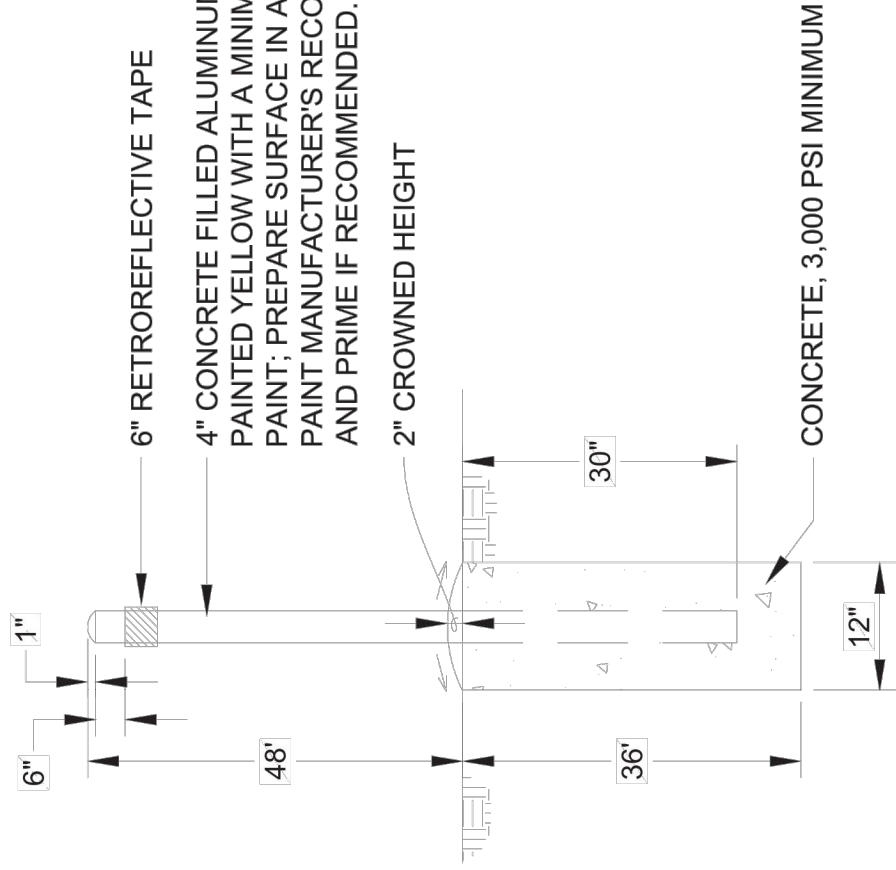
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PAO REVISED DETAILS
WATER - SEWER - MISC - DETAILS
UTILITY LINE MARKER

FILE NAME: _____ REVISED MISC DRAWINGS
LAYOUT NAME: _____ L.B.
PROJ. ENG: _____



PLAN VIEW



1C BOLLARD

Scale: N.T.S.

DATE	REVISIONS	INITIALS
12-14	UPDATED	
03-18	REVISED	L.B.
01-19	REVISED	L.T.S.



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PAO REVISED DETAILS
WATER - SEWER - MISC - DETAILS
BOLLARD

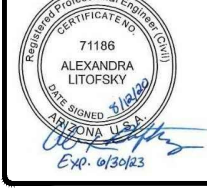
FILE NAME: _____ REVISED MISC DRAWINGS
LAYOUT NAME: _____ I.C.
PROJ. ENG: _____

THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
UTILITY LINE MARKER & BOLLARD
PH 15-U77

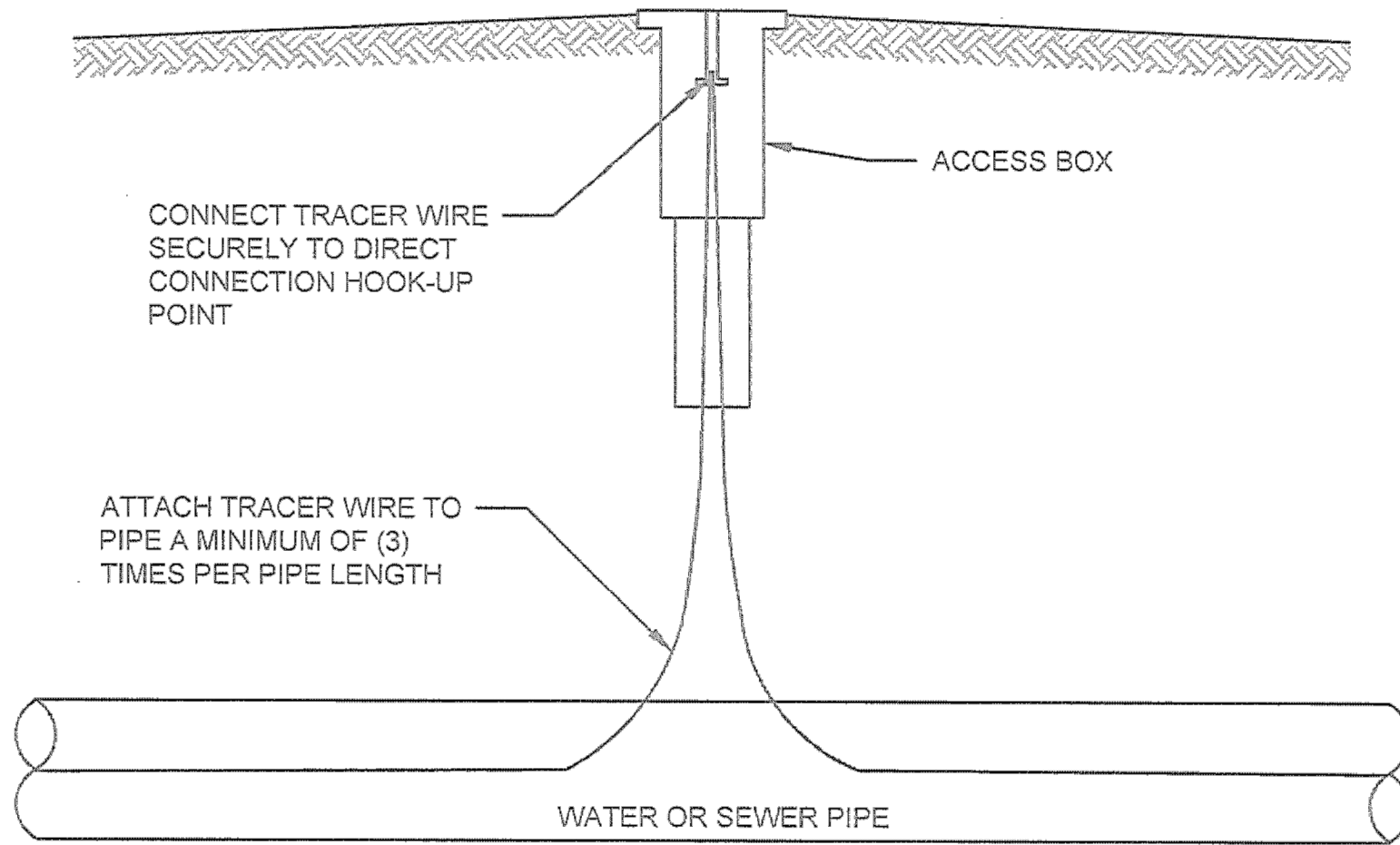
DRAWN BY: _____ DATE: 04/22/2019 FILE NAME: UMUN-C-DTWATE
CHECKED BY: _____ DATE: _____ EA NUMBER: 02-20
APPROVED BY: _____ DATE: _____ PROJ. ENG: ALEXANDRA LITOFSKY



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DATE	REVISIONS	INT.



- NOTE:
1. ACCESS BOXES SHALL BE LOCATED AS INDICATED ON THE PLANS.
 2. ACCESS BOXES SHALL BE RATED FOR ROADWAY APPLICATIONS.
 3. LID AND TUBE OF ACCESS BOX SHALL BE NON-CORROSIVE OR CORROSION RESISTANT MATERIAL AND SHALL BE SET PLUMB.
 4. LID SHALL BE COLOR CODED FOR THE FACILITY INSTALLED (BLUE - WATER, GREEN - SEWER).
 5. TEST TRACER WIRE FOR CONTINUITY AND PROPER FUNCTIONALITY.
 6. TRACER WIRE SHALL BE ATTACHED ON THE BOTTOM HALF OF THE PIPE.
 7. TRACER WIRE AND ACCESS BOX SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE MANUFACTURER'S RECOMMENDATIONS.

1H **TRACER WIRE ACCESS BOX**
Scale: NTS

DATE	REVISIONS	INITIALS



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TRACER WIRE ACCESS BOX DETAIL

DRAWN BY: _____	DATE: _____	FILE NAME: <u>LTS-2019</u>
CHECKED BY: _____	DATE: _____	LAYOUT NAME: <u>SHEET 01</u>
		PROJ ENG: <u>LORENZO SANTANA</u>

DATE	REVISIONS	INIT.



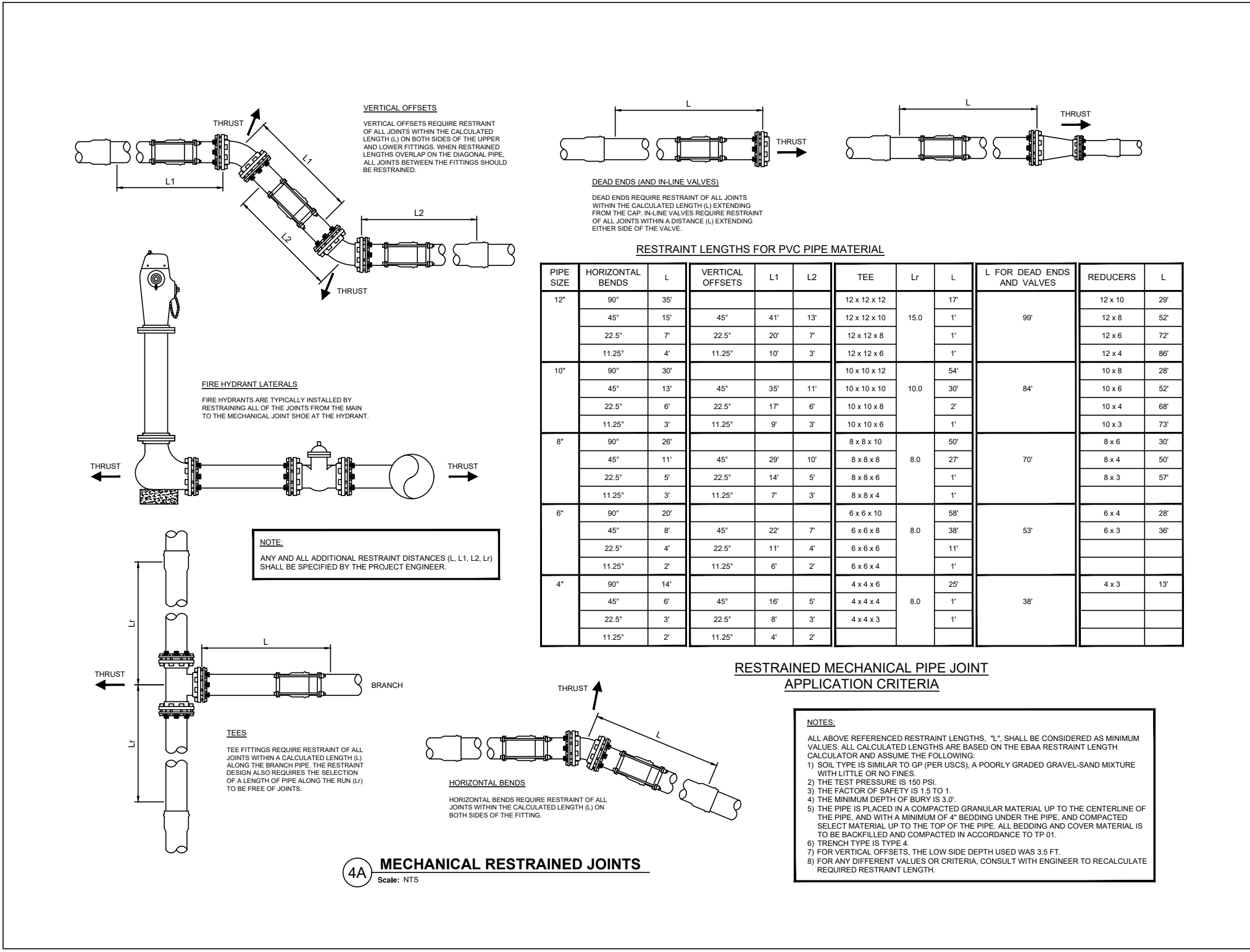
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THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
TRACER WIRE ACCESS BOX
PH 15-U77

FILE NAME: <u>DMUN-C-DTWATE</u>
EA NUMBER: <u>02-20</u>
PROJ ENG: <u>ALEXANDRA LITOFSKY</u>
DRAWN BY: _____ DATE: <u>04/22/2019</u>
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____



RESTRAINT LENGTHS FOR PVC PIPE MATERIAL

PIPE SIZE	HORIZONTAL BENDS	L	VERTICAL OFFSETS	L1	L2	TEE	L _r	L	L FOR DEAD ENDS AND VALVES	REDUCERS	L
12"	90°	35'				12 x 12 x 12	15.0	17'	99'	12 x 10	29'
	45°	15'	45°	41'	13'	12 x 12 x 10		1'		12 x 8	52'
	22.5°	7'	22.5°	20'	7'	12 x 12 x 8		1'		12 x 6	72'
	11.25°	4'	11.25°	10'	3'	12 x 12 x 6		1'		12 x 4	86'
10"	90°	30'				10 x 10 x 12	10.0	54'	84'	10 x 8	28'
	45°	13'	45°	35'	11'	10 x 10 x 10		30'		10 x 6	52'
	22.5°	6'	22.5°	17'	6'	10 x 10 x 8		2'		10 x 4	68'
	11.25°	3'	11.25°	9'	3'	10 x 10 x 6		1'		10 x 3	73'
8"	90°	26'				8 x 8 x 10	8.0	50'	70'	8 x 6	30'
	45°	11'	45°	29'	10'	8 x 8 x 8		27'		8 x 4	50'
	22.5°	5'	22.5°	14'	5'	8 x 8 x 6		1'		8 x 3	57'
	11.25°	3'	11.25°	7'	3'	8 x 8 x 4		1'			
6"	90°	20'				6 x 6 x 10	8.0	58'	53'	6 x 4	28'
	45°	8'	45°	22'	7'	6 x 6 x 8		38'		6 x 3	36'
	22.5°	4'	22.5°	11'	4'	6 x 6 x 6		11'			
	11.25°	2'	11.25°	6'	2'	6 x 6 x 4		1'			
4"	90°	14'				4 x 4 x 6	8.0	25'	38'	4 x 3	13'
	45°	6'	45°	16'	5'	4 x 4 x 4		1'			
	22.5°	3'	22.5°	8'	3'	4 x 4 x 3		1'			
	11.25°	2'	11.25°	4'	2'						

RESTRAINED MECHANICAL PIPE JOINT APPLICATION CRITERIA

- NOTES:**
- 1) ALL ABOVE REFERENCED RESTRAINT LENGTHS, "L", SHALL BE CONSIDERED AS MINIMUM VALUES. ALL CALCULATED LENGTHS ARE BASED ON THE EBAA RESTRAINT LENGTH CALCULATOR AND ASSUME THE FOLLOWING:
 - 1) SOIL TYPE IS SIMILAR TO GP (PER USCS), A POORLY GRADED GRAVEL-SAND MIXTURE WITH LITTLE OR NO FINES.
 - 2) THE TEST PRESSURE IS 150 PSI.
 - 3) THE FACTOR OF SAFETY IS 1.5 TO 1.
 - 4) THE MINIMUM DEPTH OF BURY IS 3.0'.
 - 5) THE PIPE IS PLACED IN A COMPACTED GRANULAR MATERIAL UP TO THE CENTERLINE OF THE PIPE, AND WITH A MINIMUM OF 4" BEDDING UNDER THE PIPE, AND COMPACTED SELECT MATERIAL UP TO THE TOP OF THE PIPE. ALL BEDDING AND COVER MATERIAL IS TO BE BACKFILLED AND COMPACTED IN ACCORDANCE TO TP 01.
 - 6) TRENCH TYPE IS TYPE 4.
 - 7) FOR VERTICAL OFFSETS, THE LOW SIDE DEPTH USED WAS 3.5 FT.
 - 8) FOR ANY DIFFERENT VALUES OR CRITERIA, CONSULT WITH ENGINEER TO RECALCULATE REQUIRED RESTRAINT LENGTH.

4A MECHANICAL RESTRAINED JOINTS
Scale: NTS

DATE	REVISIONS	INITIALS
11-14	UPDATED	
06-18	REVISED	LTS



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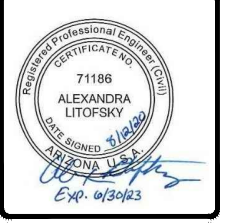
PAO REVISED DETAILS
NEW N-AQUIFER WELL CONNECTION
MECHANICAL JOINT RESTRAINT

DRAWN BY: _____ DATE: _____ FILE NAME: UMUN-C-DTWATR

CHECKED BY: _____ DATE: _____ LAYOUT NAME: C-504

PROJ ENG: _____

DATE	REVISIONS	INIT.



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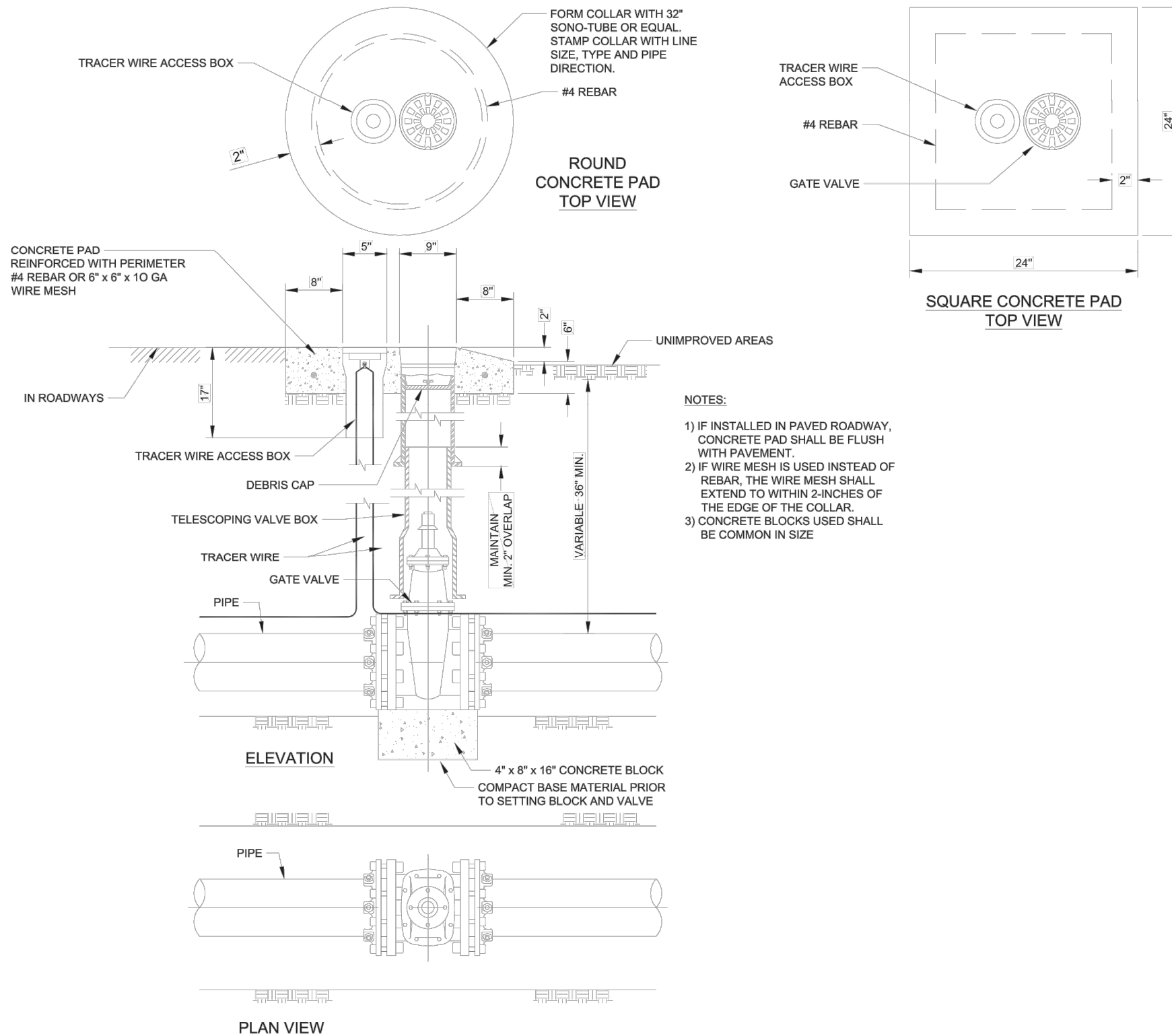


THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
MECHANICAL JOINT RESTRAINT
PH 15-U77

DRAWN BY: _____ DATE: 04/22/2019

CHECKED BY: _____ DATE: _____

PROJ ENG: ALEXANDRA LITOFSKY



- NOTES:**
- 1) IF INSTALLED IN PAVED ROADWAY, CONCRETE PAD SHALL BE FLUSH WITH PAVEMENT.
 - 2) IF WIRE MESH IS USED INSTEAD OF REBAR, THE WIRE MESH SHALL EXTEND TO WITHIN 2-INCHES OF THE EDGE OF THE COLLAR.
 - 3) CONCRETE BLOCKS USED SHALL BE COMMON IN SIZE

4B GATE VALVE WITH BOX
Scale: N.T.S.

DATE	REVISIONS	INITIALS
11-14	UPDATED	
07-18	REVISED	LTS
01-19	REVISED	LTS
03-19	REVISED	C.G.



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PAO REVISED DETAILS
WATER - SEWER - MISC DETAILS
GATE VALVE WITH BOX

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

FILE NAME: REVISED WATER DRAWINGS
LAYOUT NAME: 4B
PROJ ENG: _____

DATE	REVISIONS	INIT.



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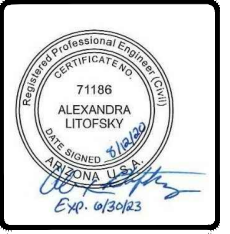


THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
GATE VALVE WITH BOX
PH 15-U77

FILE NAME: DMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
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DATE	REVISIONS	INIT.



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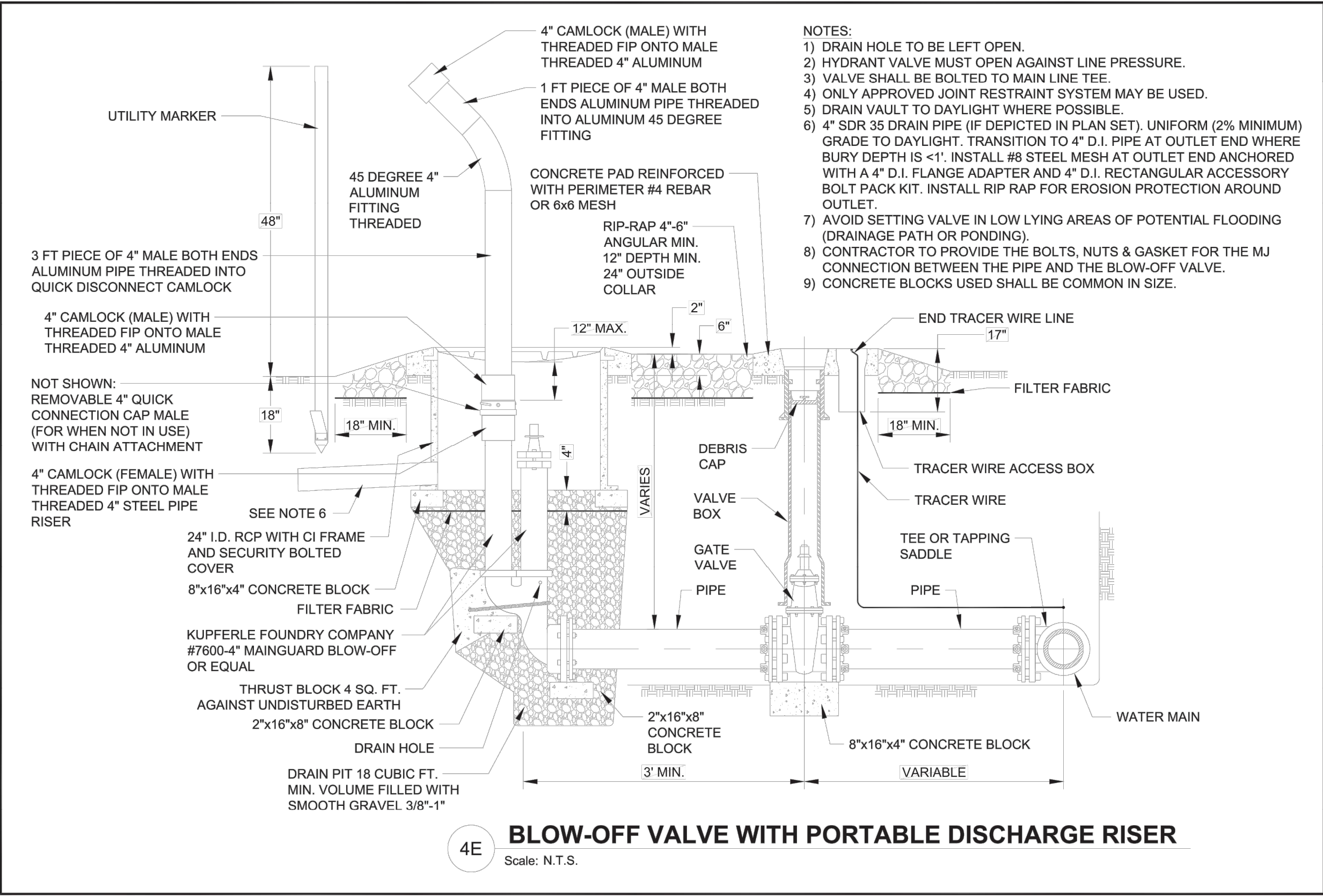
HOPI HEALTH CARE CENTER
P.O. BOX 4000
POLACCA, AZ 86042
(928) 737-8000



THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
BLOW-OFF HYDRANT
PH 15-U77

FILE NAME: UMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____



- NOTES:**
- 1) DRAIN HOLE TO BE LEFT OPEN.
 - 2) HYDRANT VALVE MUST OPEN AGAINST LINE PRESSURE.
 - 3) VALVE SHALL BE BOLTED TO MAIN LINE TEE.
 - 4) ONLY APPROVED JOINT RESTRAINT SYSTEM MAY BE USED.
 - 5) DRAIN VAULT TO DAYLIGHT WHERE POSSIBLE.
 - 6) 4" SDR 35 DRAIN PIPE (IF DEPICTED IN PLAN SET). UNIFORM (2% MINIMUM) GRADE TO DAYLIGHT. TRANSITION TO 4" D.I. PIPE AT OUTLET END WHERE BURY DEPTH IS <1'. INSTALL #8 STEEL MESH AT OUTLET END ANCHORED WITH A 4" D.I. FLANGE ADAPTER AND 4" D.I. RECTANGULAR ACCESSORY BOLT PACK KIT. INSTALL RIP RAP FOR EROSION PROTECTION AROUND OUTLET.
 - 7) AVOID SETTING VALVE IN LOW LYING AREAS OF POTENTIAL FLOODING (DRAINAGE PATH OR PONDING).
 - 8) CONTRACTOR TO PROVIDE THE BOLTS, NUTS & GASKET FOR THE MJ CONNECTION BETWEEN THE PIPE AND THE BLOW-OFF VALVE.
 - 9) CONCRETE BLOCKS USED SHALL BE COMMON IN SIZE.

4E BLOW-OFF VALVE WITH PORTABLE DISCHARGE RISER
Scale: N.T.S.

DATE	REVISIONS	INITIALS
11-14	UPDATED	
07-18	REVISED	LTS
01-19	REVISED	LTS
03-19	REVISED	C.G.



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(602) 364-5088

PAO REVISED DETAILS
WATER - SEWER - MISC DETAILS
BLOW-OFF VALVE WITH PORTABLE DISCHARGE RISER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

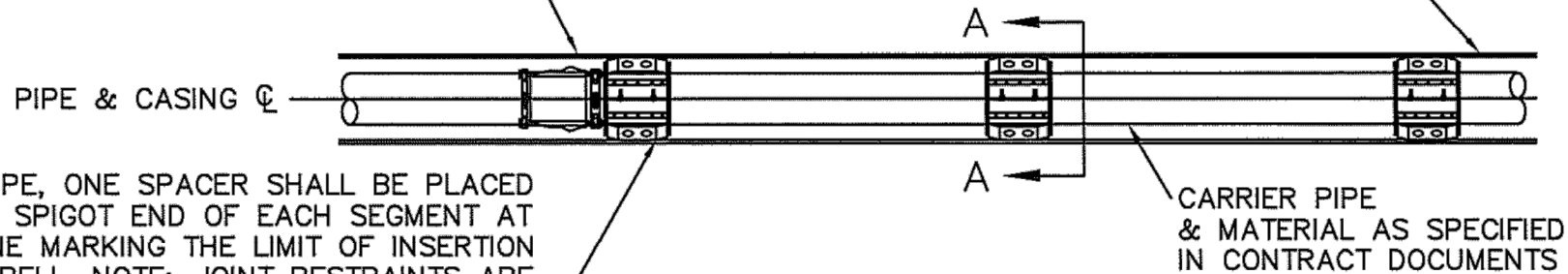
FILE NAME: REVISED WATER DRAWINGS
LAYOUT NAME: 4E
PROJ ENG: _____

ALL ASPECTS OF CASING INSTALLATIONS SHALL ADHERE TO UTILITY PERMIT REQUIREMENTS SPECIFIED BY THE ROW OWNER FOR ALL INSTALLATIONS WITHIN APPLICABLE RIGHT-OF-WAYS.

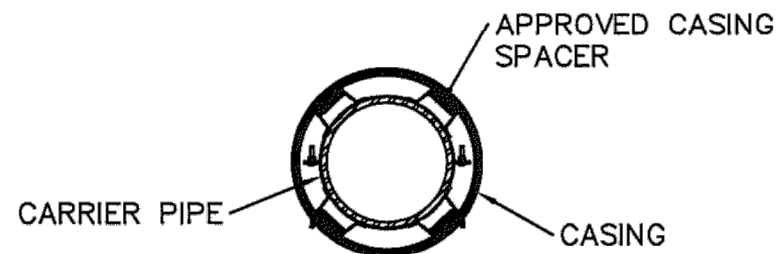
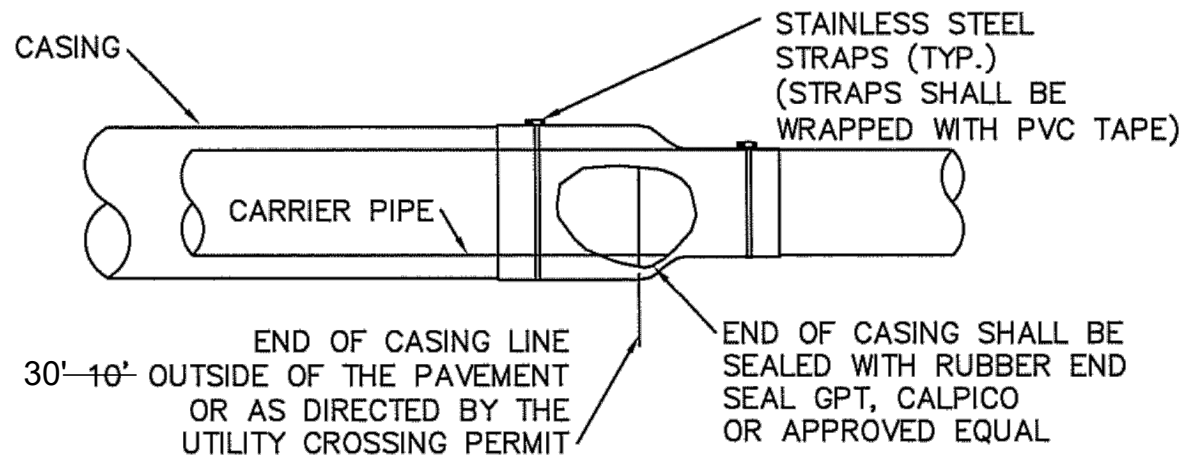
CASING PER UTILITY CROSSING PERMIT & PLAN SET. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL VERIFY THAT THE DIAMETER OF CASING IS ADEQUATE TO ACCOMMODATE CARRIER PIPE, SPACERS AND PIPE RESTRAINTS.

MAXIMUM SEPARATION OF SPACERS VARIES BY MANUFACTURER. PROVIDE A MIN.. OF 3 SPACERS PER 20' PIPE LENGTH

MINIMUM CASING PIPE DIAMETER REQUIREMENTS (UNLESS OTHERWISE INDICATED ON PLANS)	
CARRIER PIPE NOMINAL DIAMETER	MINIMUM NOMINAL CASING PIPE DIAMETER
4"	12"
6"	14"
8"	18"
10"	20"
12"	24"



FOR PVC PIPE, ONE SPACER SHALL BE PLACED ON THE SPIGOT END OF EACH SEGMENT AT THE LINE MARKING THE LIMIT OF INSERTION INTO THE BELL. NOTE: JOINT RESTRAINTS ARE REQUIRED, ONE SPACER SHALL BE INSTALLED ADJACENT TO THE RESTRAINTS.



SECTION A - A

11A-1 CASING DETAIL
Scale: NTS

DATE	REVISIONS	INITIALS
12-14	UPDATED	
04-18	REVISED	DA
03-19	REVISED	C.G.
03-19	REVISED	LTS



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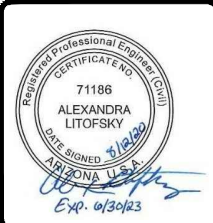
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PHOENIX, AZ 85004
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PAO REVISED DETAILS
WATER - SEWER - MISC DETAILS
CASING DETAIL

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

FILE NAME: REVISED MISC DRAWINGS WMAT
LAYOUT NAME: 11A-1 WMAT EADO
PROJ ENG: _____

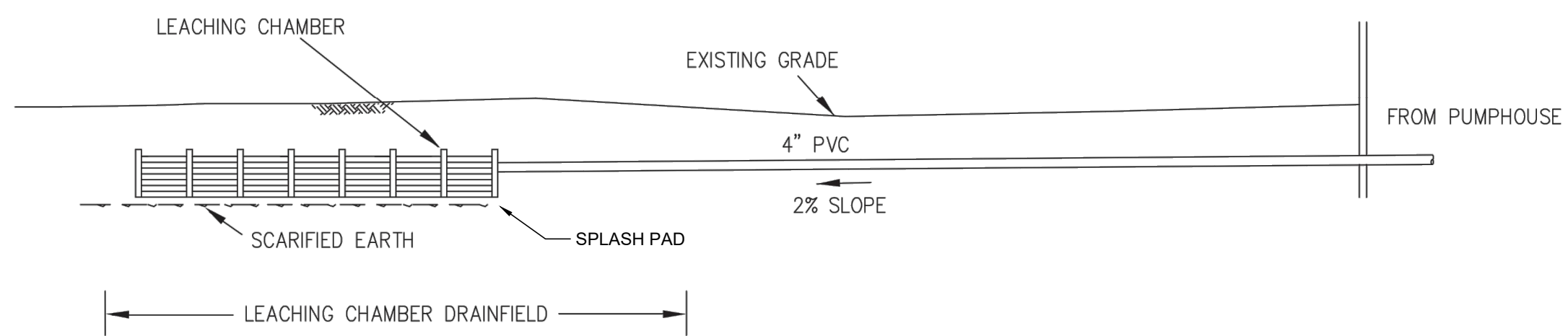
DATE	REVISIONS	INT.



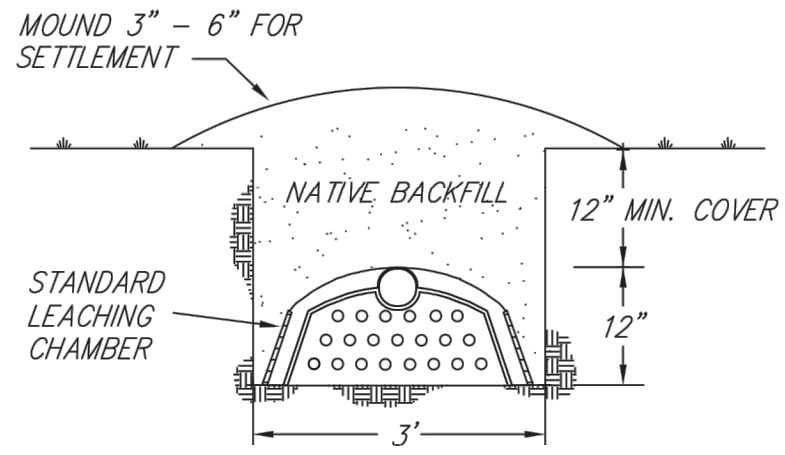
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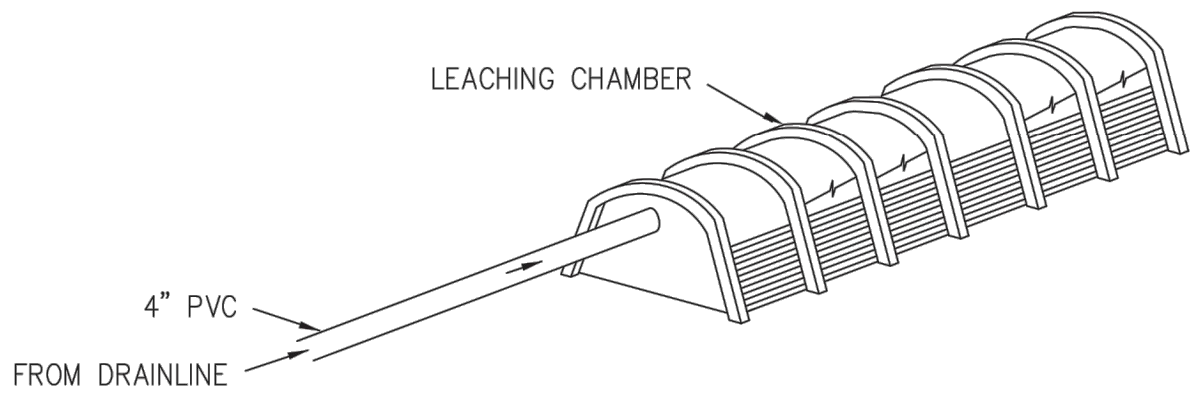
THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUITER WELL CONNECTION
CASING
PH 15-U77
FILE NAME: UMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY
DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____



DRAINFIELD PROFILE VIEW
NOT TO SCALE



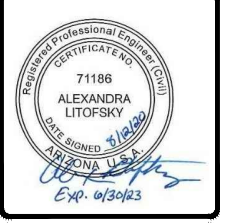
TRENCH DETAIL
END VIEW
(NOT TO SCALE)



LEACHING CHAMBER DRAINFIELD ISOMETRIC
NOT TO SCALE

LEACHING CHAMBER DRAINFIELD (FLAT SITE)

DATE	REVISIONS	INT.



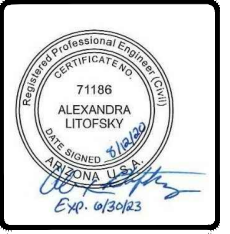
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THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
DRAINFIELD
PH 15-U77

DRAWN BY: -----	DATE: 04/22/2019	FILE NAME: UMUN-C-DTWATE
CHECKED BY: -----	DATE: -----	EA NUMBER: 02-20
APPROVED BY: -----	DATE: -----	PROJ ENG: ALEXANDRA LITOFSKY

DATE	REVISIONS	INIT.



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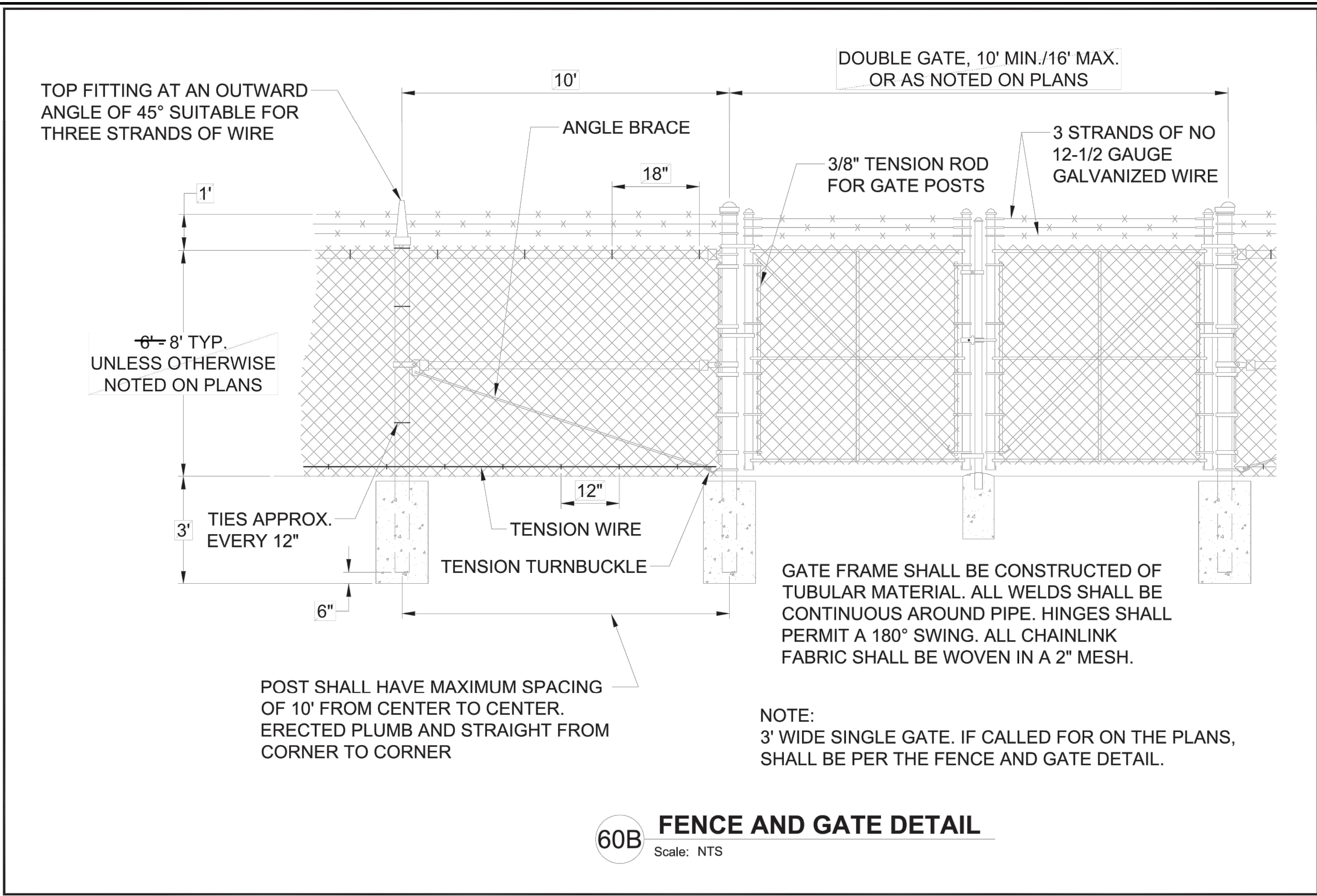
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THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
FENCE AND GATE
PH 15-U77

FILE NAME: UMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____



60B FENCE AND GATE DETAIL
Scale: NTS

DATE	REVISIONS	INITIALS
11-14	UPDATED	
02-18	REVISED	BR

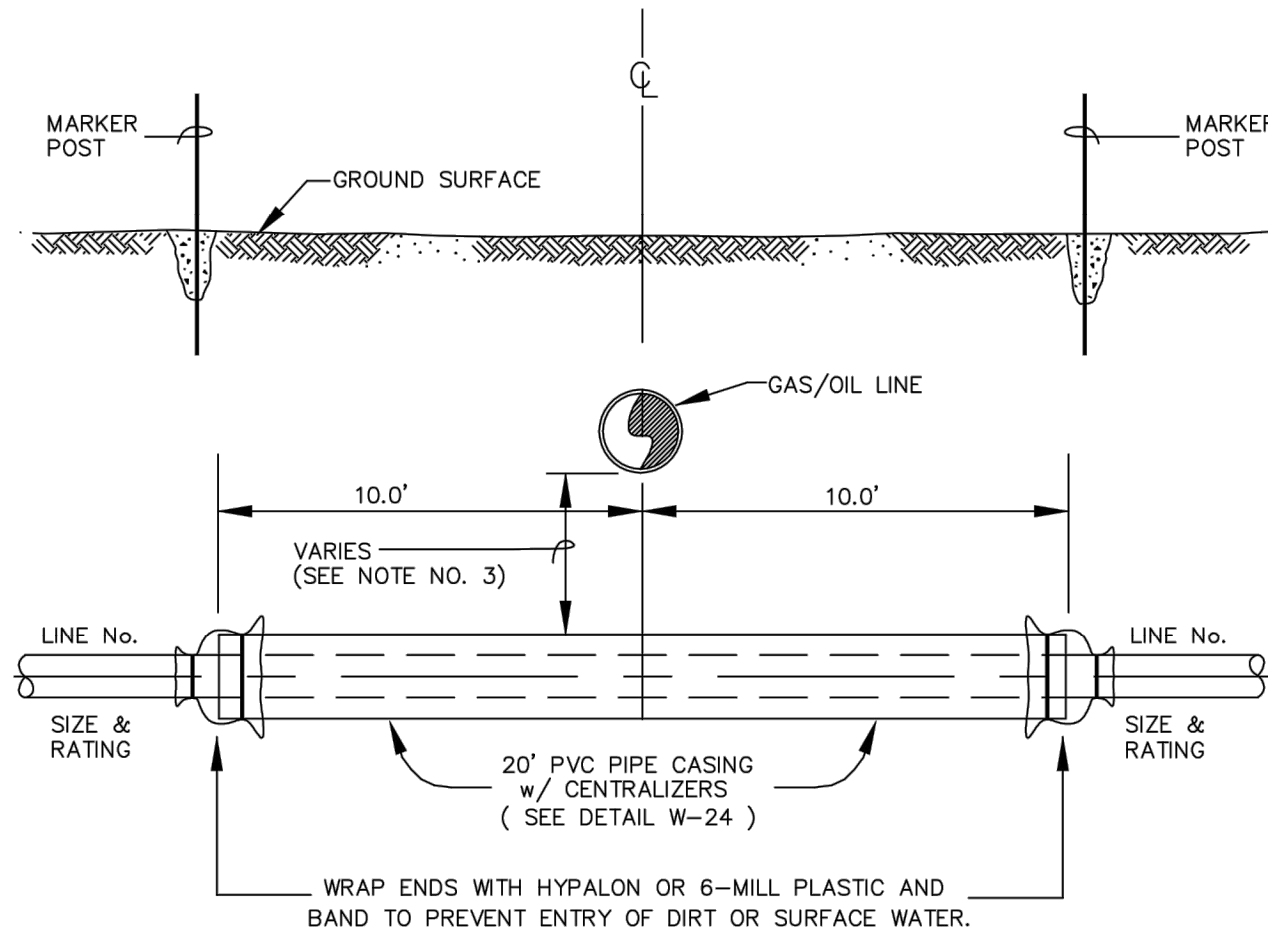
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PAO REVISED DETAILS
WATER - SEWER - MISC DETAILS
FENCE AND GATE DETAIL

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

FILE NAME: REVISED MISC DRAWINGS
LAYOUT NAME: 60B
PROJ ENG: _____



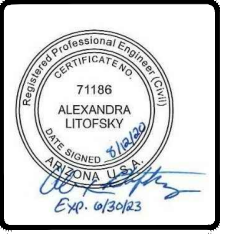
PROFILE OF GAS/OIL LINE-XING
NOT TO SCALE

NOTES:

1. UTILITY CROSSING PERMITS ARE REQUIRED FROM THE GAS OR OIL COMPANY.
2. CASING SHOULD BE PVC SO AS NOT TO INTERFERE WITH GAS/OIL LINE CATHODIC PROTECTION.
3. MINIMUM SEPARATION BETWEEN THE GAS/OIL LINE AND THE WATER LINE CASING IS 24" PER DEPT. OF TRANSPORTATION REGULATIONS. HOWEVER, ACTUAL DEPTH OF BURY AND PLACEMENT OF THE WATERLINE (ABOVE OR BELOW GAS/OIL LINE) SHOULD BE IN ACCORDANCE WITH THE CONDITIONS SET FORTH IN THE INDIVIDUAL UTILITY CROSSING PERMIT ISSUED BY THE GAS/OIL PIPELINE COMPANY.

1	7/99	STANDARDIZED	B.M.
REVISION	DATE	BRIEF	BY
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES PUBLIC HEALTH SERVICE INDIAN HEALTH SERVICE NAVAJO NATION			
NAVAJO NATION, STANDARD DRAWING NO. W-13 GAS/OIL LINE CROSSING DETAIL			
OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING NAVAJO AREA OFFICE, WINDOW ROCK, ARIZONA			
DRAWN BY: L.S.	CHECKED BY: P.S.	APPR. BY: P.S.	AUTOCAD
DATE: 12/92	DATE: 12/92	DATE: 12/92	DRAWING

DATE	REVISIONS	INT.



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HEALTH & ENGINEERING

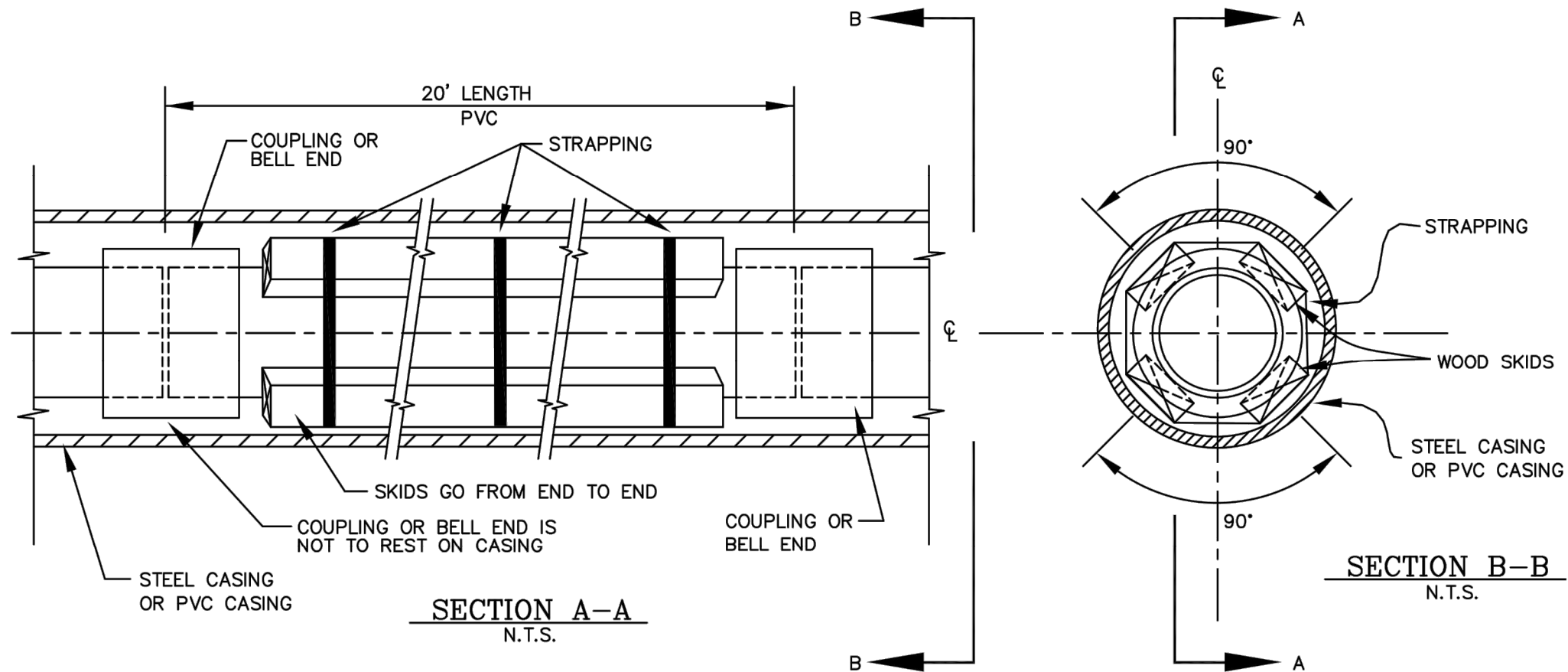
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THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
GAS LINE CROSSING
PH 15-U77

FILE NAME: UMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____



INSTALLATION OF PVC PIPE IN CASING
N.T.S.

STEEL PIPE CASING

STEEL CASING, ASTM A53, TYPE E, GRADE B - INFO TABLE							
PIPE SIZE	2"	4"	6"	8"	10"	12"	14"
CASING SIZE:	8" or 10"	8" or 10"	12"	14"	14"	20"	22"
CASING SCH:	20	20	20	10	10	10	10
WALL THICKNESS	0.25	0.25	0.25	0.25	0.25	0.25	0.25
TEST PRESS. (psi)	1220	1220	820	750	750	520	440

- NOTES: 1. SEAL ENDS OF CASING. STEEL CASING SHALL BE BUTT-WELDED AND WATER TIGHT.
 2. AT MINIMUM, STRAP AT BOTH ENDS AND MIDDLE OF EACH JOINT OF PIPE.
 3. ROAD BORING BY NECA IS 8", 10", 14", OR 20".

CORRUGATED METAL PIPE CASING

CORRUGATED METAL PIPE CASING: SHALL MEET AASHTO M36 AND AASHTO M218, PIPE CLASSIFICATION SHALL BE TYPE I, HELICAL CORRUGATIONS, SHEET THICKNESS SHALL BE 16 GAUGE. PIPE FABRICATION METHOD SHALL BE HELICAL CORRUGATIONS WITH A CONTINUOUS WELD SEAM IN WHICH THE ENDS HAVE BEEN ENROLLED TO FORM ANNULAR CORRUGATIONS. JOINING SYSTEM FOR CMP CASING SHALL BE COUPLING BANDS WITH ANNULAR CORRUGATIONS WHICH ARE NOT WATER TIGHT.

REVISION	DATE	BRIEF	BY
3	01/16	MODIFIED STEEL PIPE CASING TABLE AND NOTE #3	WZS
2	08/13	MODIFIED PER BIA LETTER DATED 07/18/13	WZS
1	7/99	STANDARDIZED	B.M.

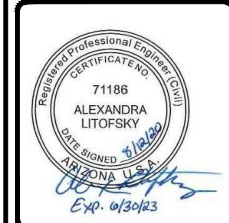
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
 PUBLIC HEALTH SERVICE
 INDIAN HEALTH SERVICE
 NAVAJO NATION

NAVAJO NATION,
 STANDARD DRAWING NO. W-24
 INSTALLATION OF PVC PIPE
 IN CASING

OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING
 NAVAJO AREA OFFICE, WINDOW ROCK, ARIZONA

DRAWN BY: L.S.	CHECKED BY: P.S.	APPR. BY: P.S.	AUTOCAD
DATE: 12/92	DATE: 12/92	DATE: 12/92	DRAWING

DATE	REVISIONS	INT.



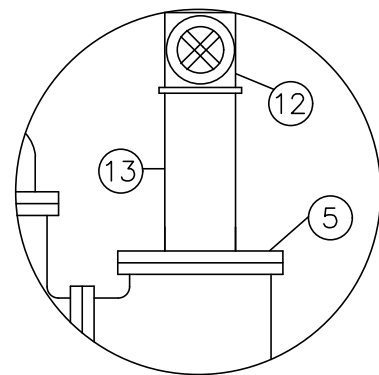
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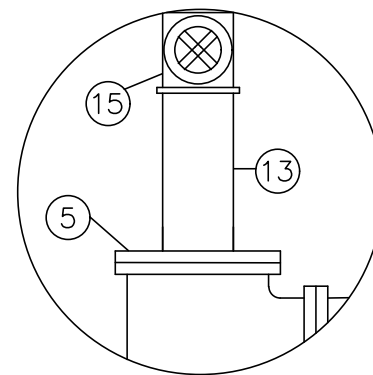
THE HOPI TRIBE
 UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
 NEW N-AQUIFER WELL CONNECTION
 PIPE CASING
 PH 15-U77
 FILE NAME: DMUN-C-DTWATE
 EA NUMBER: 02-20
 PROJ ENG: ALEXANDRA LITOFSKY
 DRAWN BY: _____ DATE: 04/22/2019
 CHECKED BY: _____ DATE: _____
 APPROVED BY: _____ DATE: _____

NOTES:

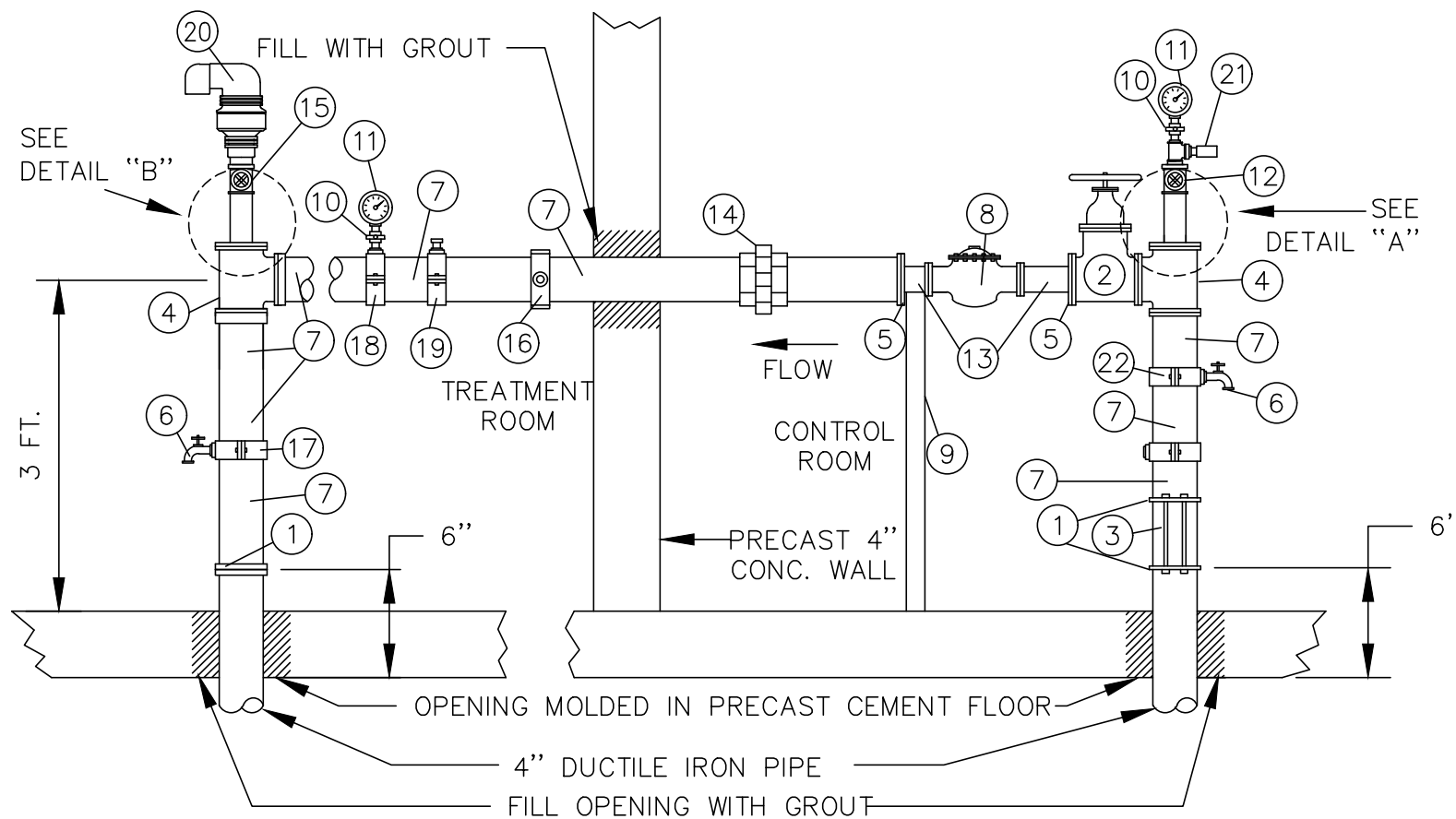
1. PIPE AND CAST IRON VALVES/FITTINGS PRIMED AND PAINTED BLUE, ORDER PAINT AND PRIMER SEPARATELY
2. HIGH PRESSURE RATED GAUGES AND VALVES (150 PSI MINIMUM) SHALL BE INSTALLED
3. WRAP EXTERIOR D.I. PIPING WITH POLYGEN TAPE OR POLYWRAP SLEEVES



DETAIL "A"
N.T.S.



DETAIL "B"
N.T.S.

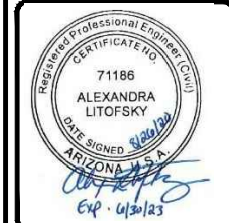


4" FLANGED PUMPHOUSE PIPING (FRONT VIEW)

(150 # FLANGES)

ITEM	QUAN.	DESCRIPTION
1	4	ADAPTER FLANGE
2	3	GATE VALVE, 4" FLANGE, C.I. w/WHEEL
3	1	CHECK VALVE, 4" SILENT, GLOBE STYLE WITH BOLTS FLANGES
4	2	TEE, 4" D.I.
5	4	REDUCING FLANGE, 2" FIPT x 9" FACE
6	2	HOSE BIBB, 3/4" WITH BACKFLOW PREVENTION
7		D.I. PIPE, 4" (FLANGED)
8	1	2" ELECTROMAGNETIC WATER METER, SENSUS ACCUMAG OR EQUAL 175 PSI MAX. (WITH FLANGES)
9	1	PIPE SUPPORT, SEE SHEET C-515 DETAIL 2
10	2	VALVE, PRESSURE COCK, 1/4"
11	2	PRESSURE GAUGE
12	1	GATE VALVE, 2" BRASS (FEMALE THREADED ENDS) W/ 2"x 3/4" & 3/4"x 1/4" BUSHINGS (FOR PRESSURE GAUGE & HIGH PRESSURE CUTOFF SWITCH)
13		D.I. PIPE, 2" (CUT TO FIT)
14	1	UNION, 4" D.I.
15	1	BALL ISOLATION VALVE, 2", STAINLESS STEEL
16	1	STAINLESS STEEL SADDLE, 4"x 1" (FOR CHEMICAL FEED INTRODUCTION)
17	2	STAINLESS STEEL SADDLE, 4"x 3/4" (FOR HOSE BIBB)
18	1	STAINLESS STEEL SADDLE, 4"x 1", WITH 1"x 1/4" BUSHING (FOR PRESSURE GAUGE)
19	1	STAINLESS STEEL SADDLE, 4"x 1" (FOR FLOW SWITCH)
20	1	ARI D-040 ARV OR APPROVED EQUAL, 2"
21	1	1/4" BRASS TEE TRANSDUCER
22	1	D.I. SADDLE, 4"x 3/4" (FOR HOSE BIBB)

DATE	REVISIONS	INT.



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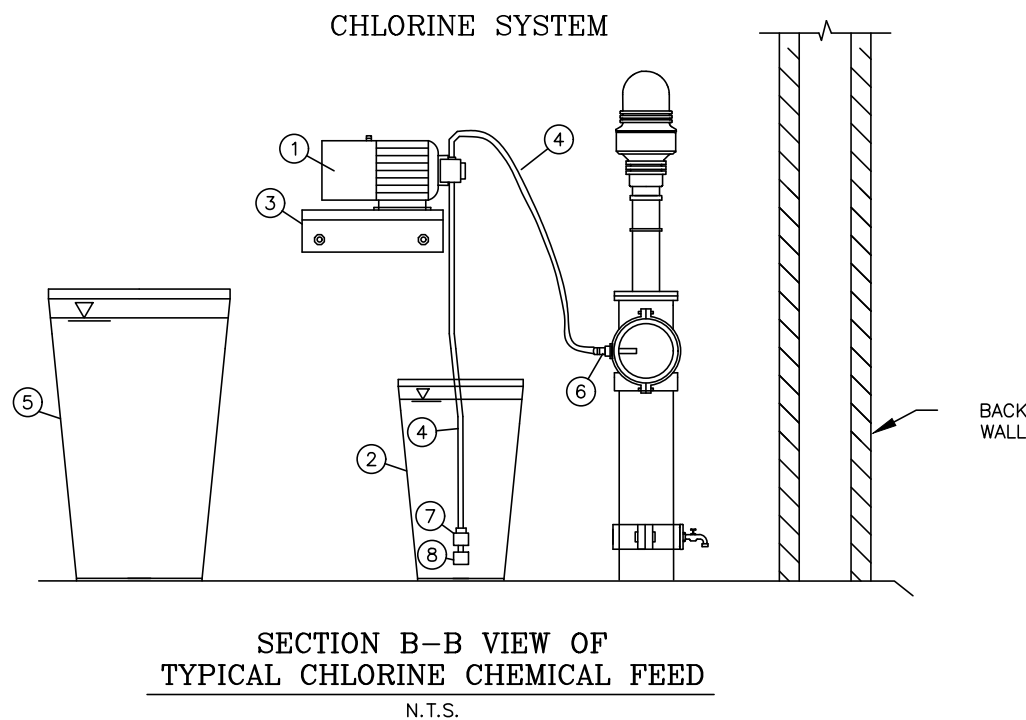
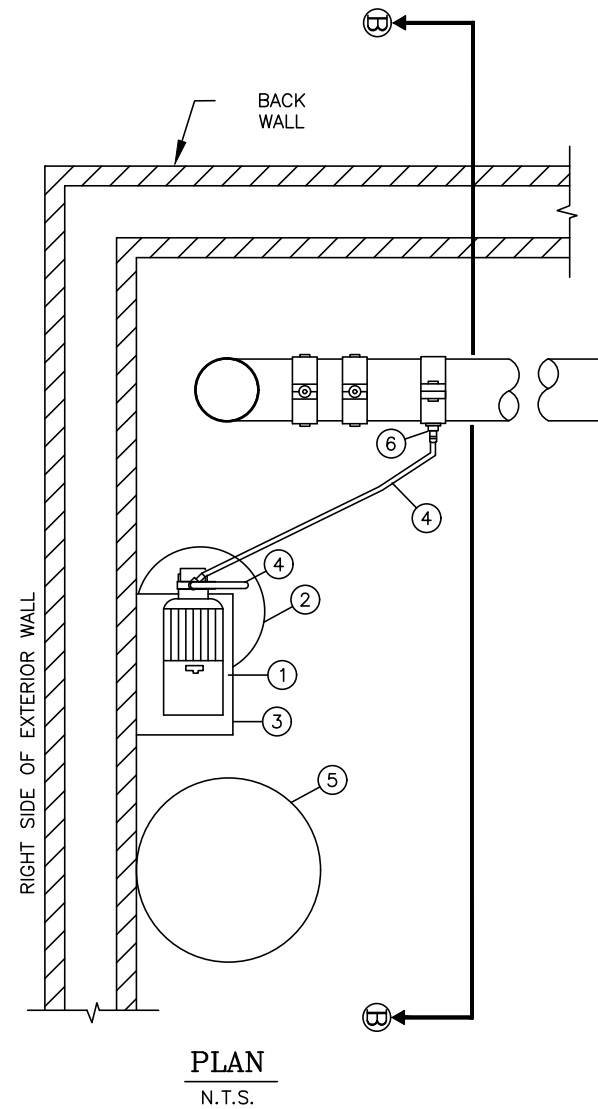
THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
PUMP HOUSE PIPING
PH 15-U77

FILE NAME: UMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

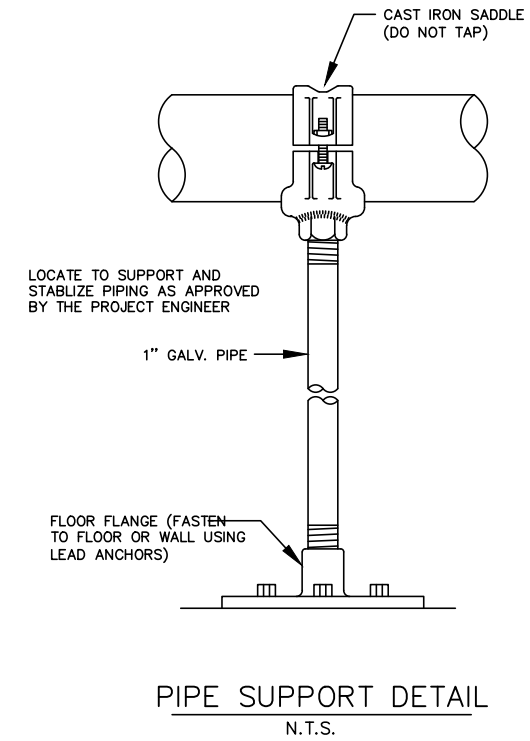
DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

ITEM	QUAN.	DESCRIPTION
1	1	STENNER PERISTALTIC PUMP 45MHP22 OR EQUAL FOR CHLORINATION
2	1	15 GALLON BATCH TANK
3	1	WALL BRACKET
4	1	3/8" CLEAR P.E. TUBING (SUPPLIED w/PUMP)
5	1	50 GALLON SOLUTION TANK
6	1	INJECTION CHECK VALVE (SUPPLIED w/PUMP)
7	1	CERAMIC WEIGHT (SUPPLIED w/PUMP)
8	1	FOOT VALVE (SUPPLIED w/PUMP)

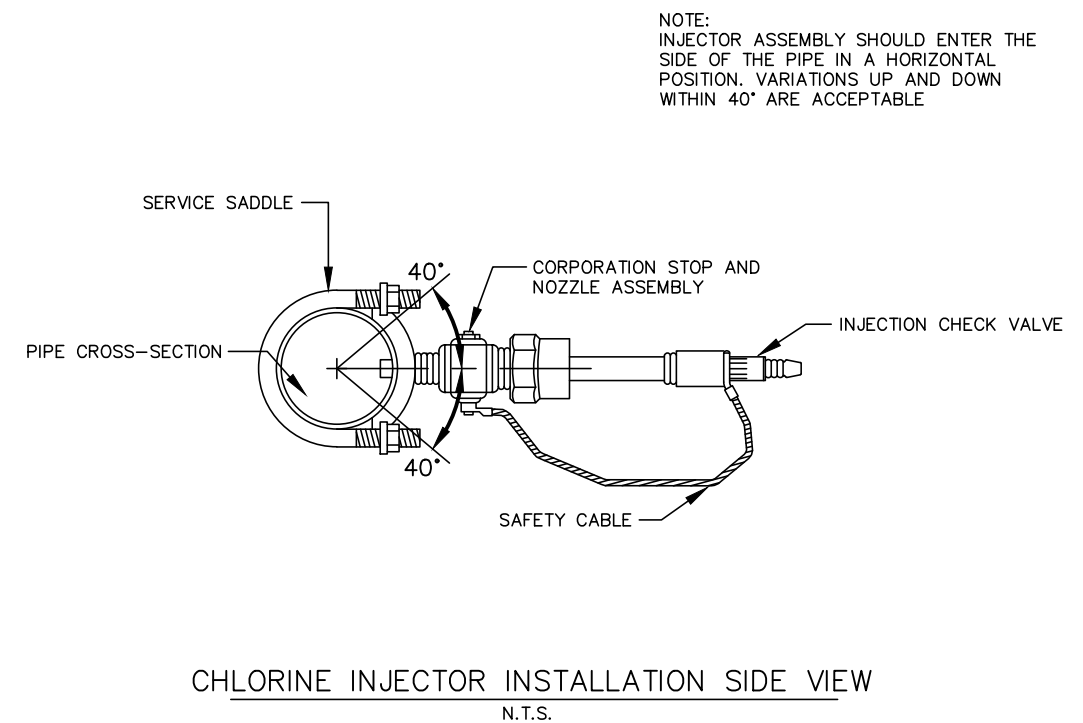
NOTES:
 1. FOOT VALVE MUST BE INSTALLED COMPLETELY VERTICAL. USE CERAMIC WEIGHT TO KEEP VALVE VERTICAL.



DETAIL 1

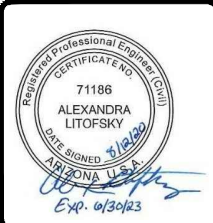


DETAIL 2



DETAIL 3

DATE	REVISIONS	INT.



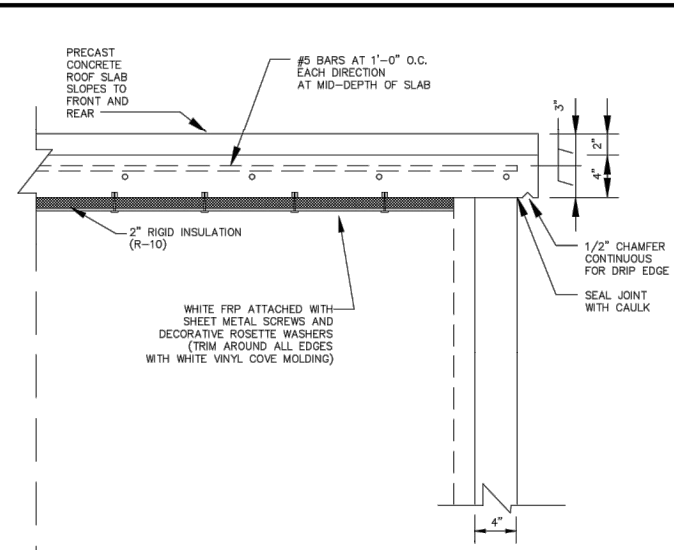
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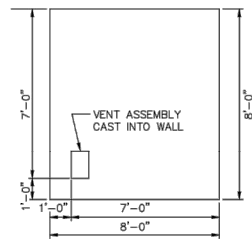
THE HOPI TRIBE
 UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
 NEW N-AQUIFER WELL CONNECTION
 CHLORINATION FEED
 PH 15-U77

FILE NAME: UMUN-C-DTWATE
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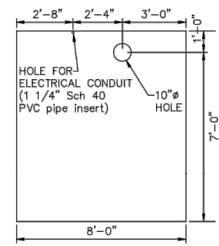
DRAWN BY: _____ DATE: 04/22/2019
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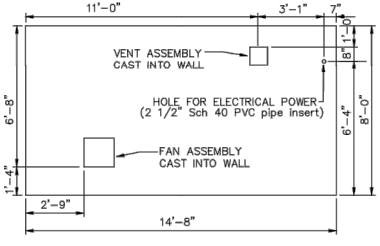
ROOM CENTERLINE
**ROOF CONNECTION
DETAIL A**
SCALE : 1 1/2" = 1'-0"



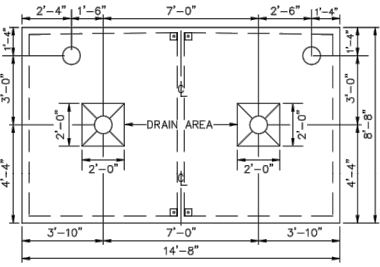
LEFT WALL
SCALE : 1/4" = 1'-0"



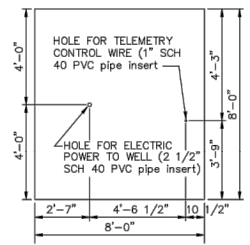
INTERIOR WALL
SCALE : 1/4" = 1'-0"



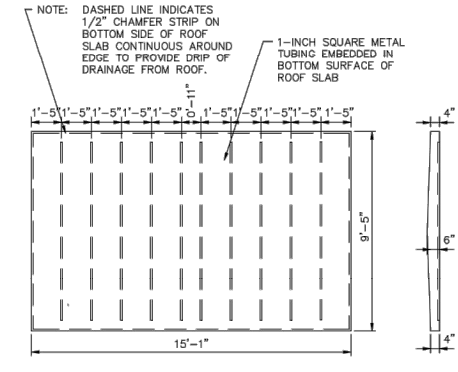
REAR WALL
SCALE : 1/4" = 1'-0"



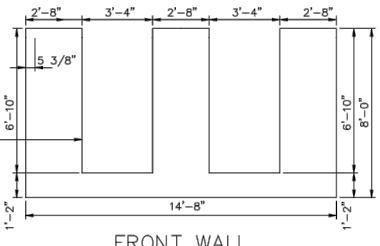
BASE (FLOOR) SLAB
SCALE : 1/4" = 1'-0"



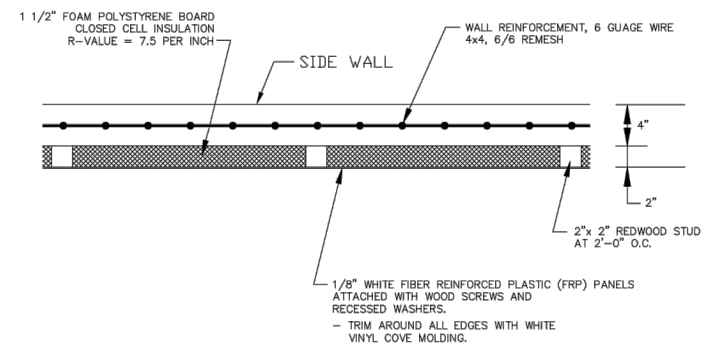
RIGHT WALL
SCALE : 1/4" = 1'-0"



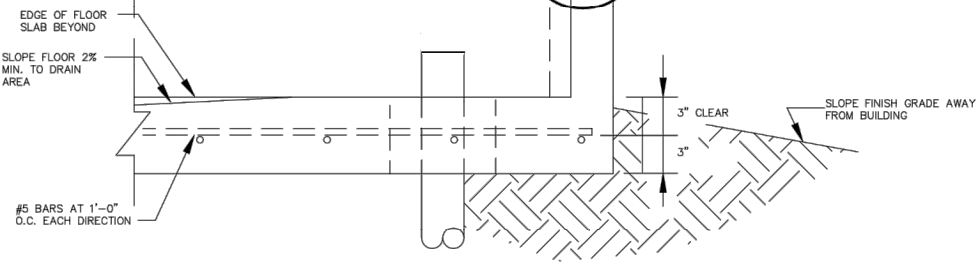
ROOF SLAB
SCALE : 1/4" = 1'-0"



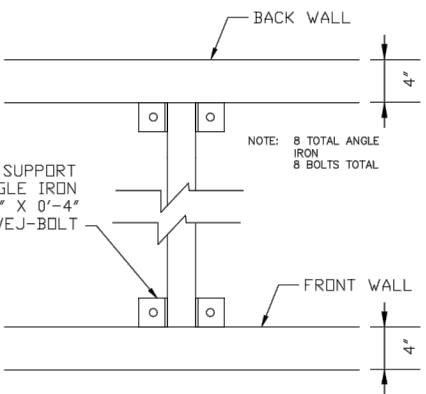
FRONT WALL
SCALE : 1/4" = 1'-0"



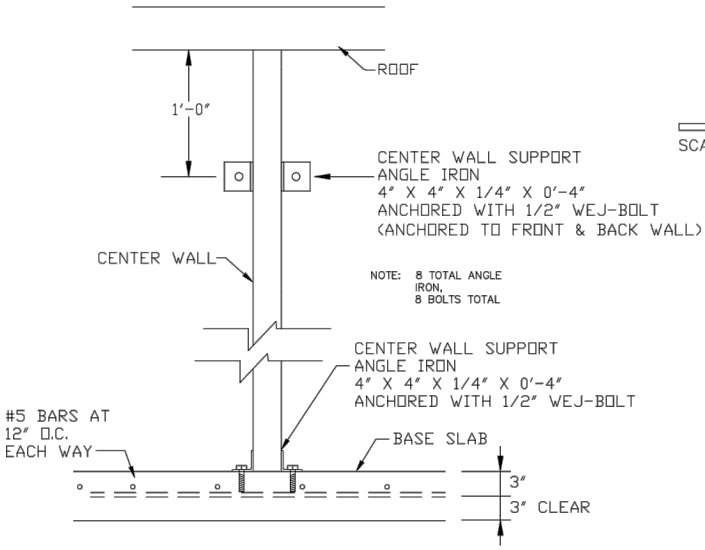
**WALL PANEL
DETAIL C**
SCALE : 1 1/2" = 1'-0"



**FLOOR CONNECTION
DETAIL B**
SCALE : 1 1/2" = 1'-0"



**PLAN CONNECTION
ANGLE IRON
AT CENTER WALL**



**ELEVATION CONNECTION
ANGLE IRON
AT CENTER WALL**

NOTE: REBAR AT LIFT POINTS ARE #5 REBAR, 12" SEPARATION CENTERED ON LIFT POINTS. REBARS ARE CENTERED THE ENTIRE LENGTH AND WIDTH (BOTH DIRECTIONS OF EACH LIFT POINTS).

NOTE: DOOR FRAMES SHALL BE CAST WITH THE SLAB.

NOTE: DASHED LINE INDICATES 1/2" CHAMFER STRIP ON BOTTOM SIDE OF ROOF SLAB CONTINUOUS AROUND EDGE TO PROVIDE DRIP OF DRAINAGE FROM ROOF.

1	10/00	TITLE BLOCK CHANGE	W.S.
REVISION	DATE	DESCRIPTION	BY
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES PUBLIC HEALTH SERVICE INDIAN HEALTH SERVICE NAVAJO NATION			
TWO-ROOM PRECAST PUMPHOUSE W-29 DRAWING 2 OF 2			
PUBLIC LAW 86-121 OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING NAVAJO AREA INDIAN HEALTH SERVICE			
DRAWN BY: G.L.G. DATE: 11-17-89	REVISED BY: H.J. DATE: 11-06-96	SHEET OF TOTAL SHEETS	

INT.
REVISIONS
DATE



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HEALTH & ENGINEERING**
HOPI HEALTH CARE CENTER
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POLACCA, AZ 86042
(928) 737-8000



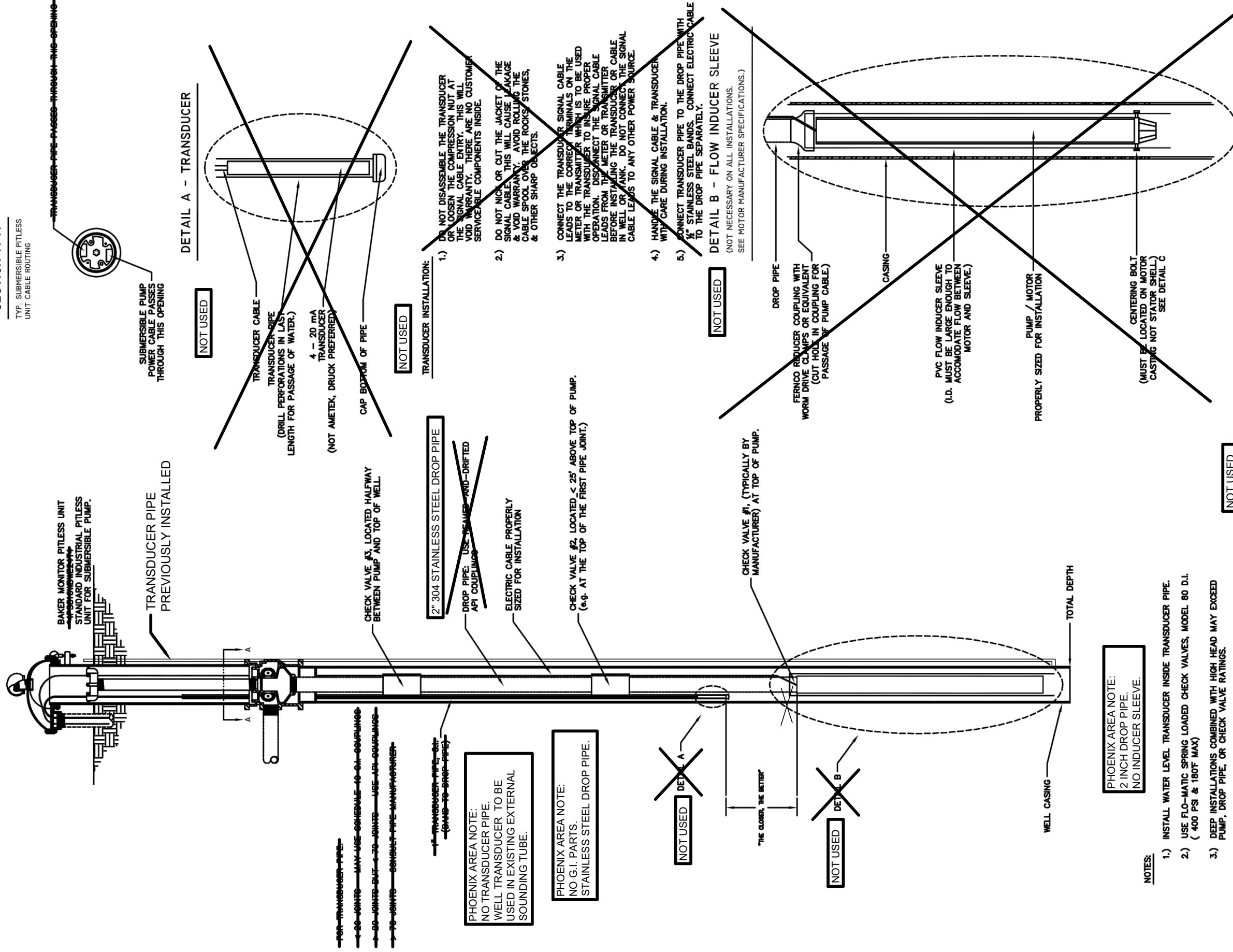
THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
TWO-ROOM PUMP HOUSE 2
PH 15-U77

FILE NAME: UMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

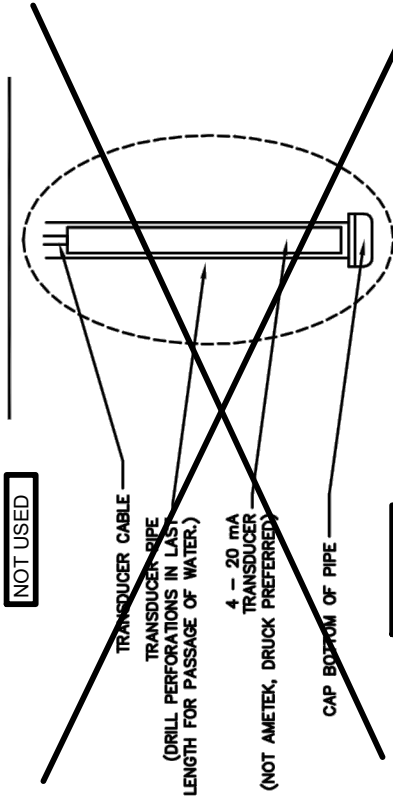
DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

SECTION A-A

TYP. SUBMERSIBLE PITLESS
UNIT CABLE ROUTING



DETAIL A - TRANSDUCER



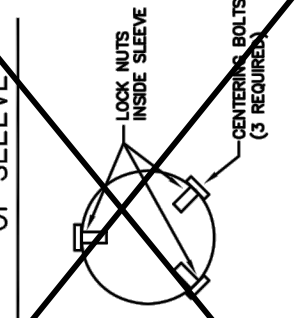
NOT USED

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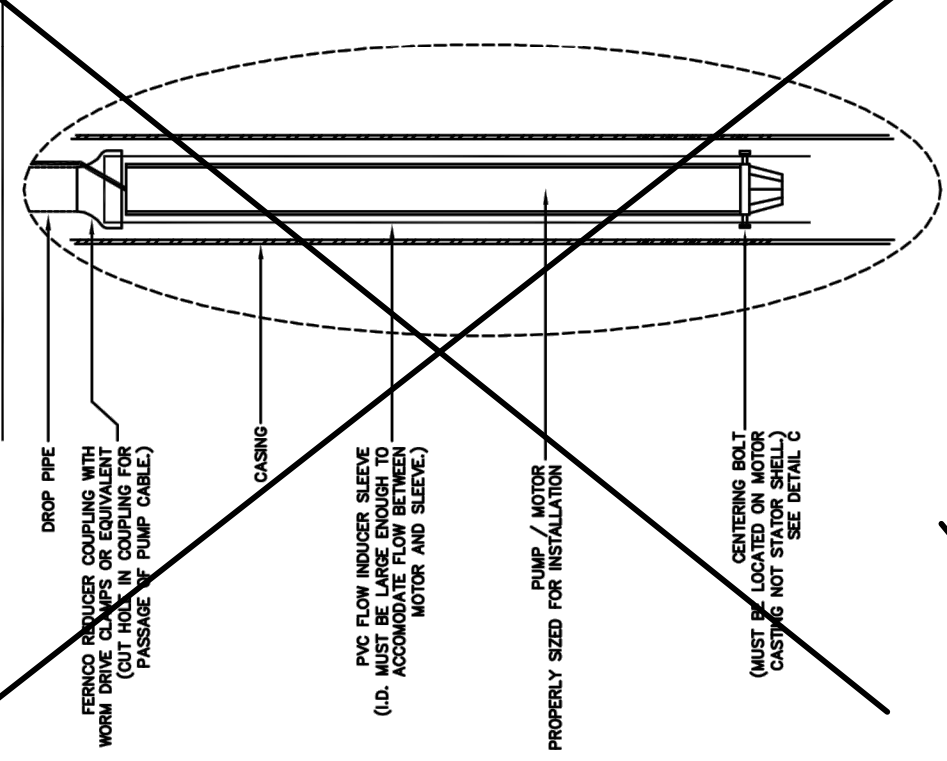
NOT USED

DETAIL C - BOTTOM VIEW OF SLEEVE



- TRANS-DUCER INSTALLATION:
- DO NOT DISASSEMBLE THE TRANSDUCER OR LOOSEN THE COMPRESSION NUT AT THE SIGNAL CABLE ENTRY. THIS WILL VOID WARRANTY. THERE ARE NO CUSTOMER SERVICEABLE COMPONENTS INSIDE.
 - DO NOT NICK OR CUT THE JACKET OF THE SIGNAL CABLE. THIS WILL CAUSE DAMAGE & VOID WARRANTY. AVOID ROLLING THE CABLE SPOOL OVER THE ROCKS, STONES, & OTHER SHARP OBJECTS.
 - CONNECT THE TRANSDUCER SIGNAL CABLE LEADS TO THE CORRECT TERMINALS ON THE METER OR TRANSDUCER WHICH IS TO BE USED WITH THE TRANSDUCER TO INSURE PROPER OPERATION. DISCONNECT THE SIGNAL CABLE LEADS FROM THE METER OR TRANSDUCER BEFORE INSTALLING THE TRANSDUCER OR CABLE IN WELL OR TANK. DO NOT CONNECT THE SIGNAL CABLE LEADS TO ANY OTHER POWER SOURCE.
 - HANDLE THE SIGNAL CABLE & TRANSDUCER WITH CARE DURING INSTALLATION.
 - CONNECT TRANSDUCER PIPE TO THE DROP PIPE WITH $\frac{1}{2}$ " STAINLESS STEEL BANDS. CONNECT ELECTRIC CABLE TO THE DROP PIPE SEPARATELY.

DETAIL B - FLOW INDUCER SLEEVE
(NOT NECESSARY ON ALL INSTALLATIONS.
SEE MOTOR MANUFACTURER SPECIFICATIONS.)



PHOENIX AREA NOTE:
2 INCH DROP PIPE.
NO INDUCER SLEEVE.

- NOTES:
- INSTALL WATER LEVEL TRANSDUCER INSIDE TRANSDUCER PIPE.
 - USE FLO-MATIC SPRING LOADED CHECK VALVES, MODEL 80 D.I. (400 PSI & 180F MAX)
 - DEEP INSTALLATIONS COMBINED WITH HIGH HEAD MAY EXCEED PUMP, DROP PIPE, OR CHECK VALVE RATINGS.

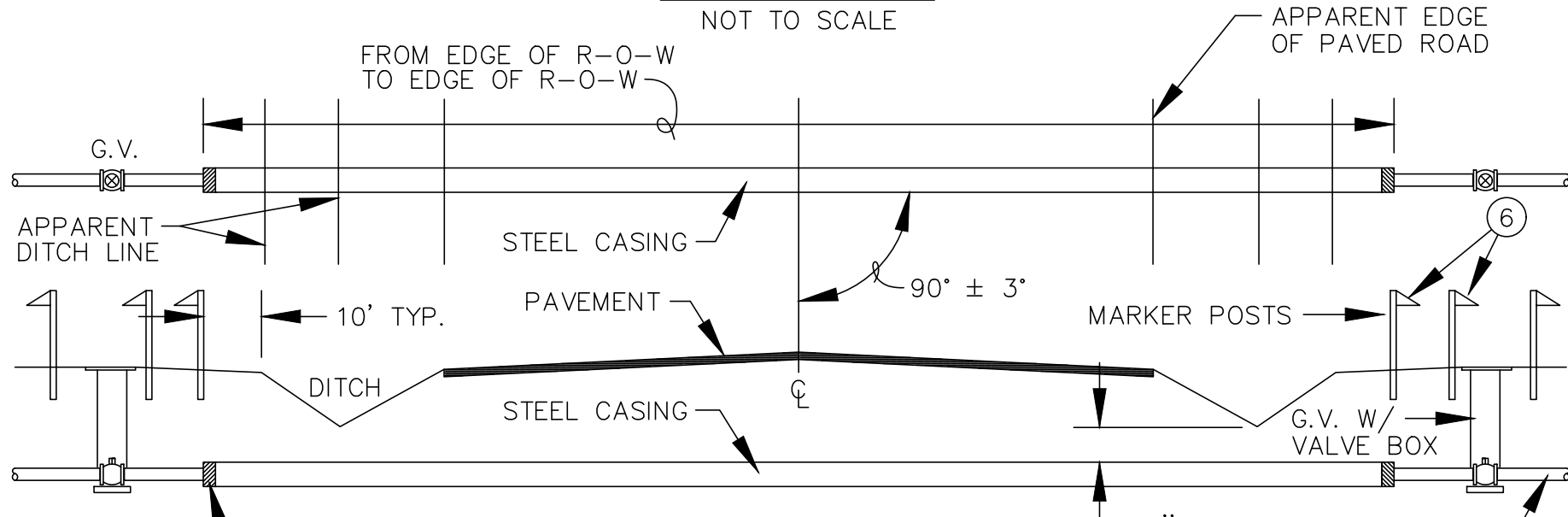
PHOENIX AREA NOTE:
NO TRANSDUCER PIPE.
WELL TRANSDUCER TO BE
USED IN EXISTING EXTERNAL
SOUNDING TUBE.

PHOENIX AREA NOTE:
NO G.I. PARTS.
STAINLESS STEEL DROP PIPE.

<p>THE HOPI TRIBE UPPER MOENKOPI - COCONINO COUNTY, ARIZONA NEW N-AQUIFER WELL CONNECTION WELL INSTALLATION PH 15-U77</p>		<p>FILE NAME: UMUN-C-DTWATE EA NUMBER: 02-20 PROJ ENG: ALEXANDRA LITOFISKY</p>	
<p>DRAWN BY: _____ DATE: 04/22/2019</p>	<p>CHECKED BY: _____ DATE: _____</p>	<p>APPROVED BY: _____ DATE: _____</p>	<p>DATE: _____ REVISIONS: _____</p>
<p>INDIAN HEALTH SERVICE OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING HOPI HEALTH CARE CENTER P.O. BOX 4000 POLACCA, AZ 86042 (928) 737-8000</p>		<p>REGISTERED PROFESSIONAL ENGINEER 71186 ALEXANDRA LITOFISKY DATE SIGNED: 4/22/2019 ARIZONA U.S.A. Exp: 4/30/23</p>	
<p>STANDARD DRAWING NO. W-30 TYPICAL WATER WELL INSTALLATION</p>		<p>U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES PUBLIC HEALTH SERVICE INDIAN HEALTH SERVICE NAVAJO NATION NAVAJO NATION</p>	
<p>OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING NAVAJO AREA OFFICE, WINDOW ROCK, ARIZONA</p>		<p>DRAWN BY: LJS CHECKED BY: REM DATE: 9/08 DATE: 9/08 DATE: 9/08 AUTOCAD FILE: WELLS.DWG SHEET OF</p>	

PLAN VIEW

NOT TO SCALE



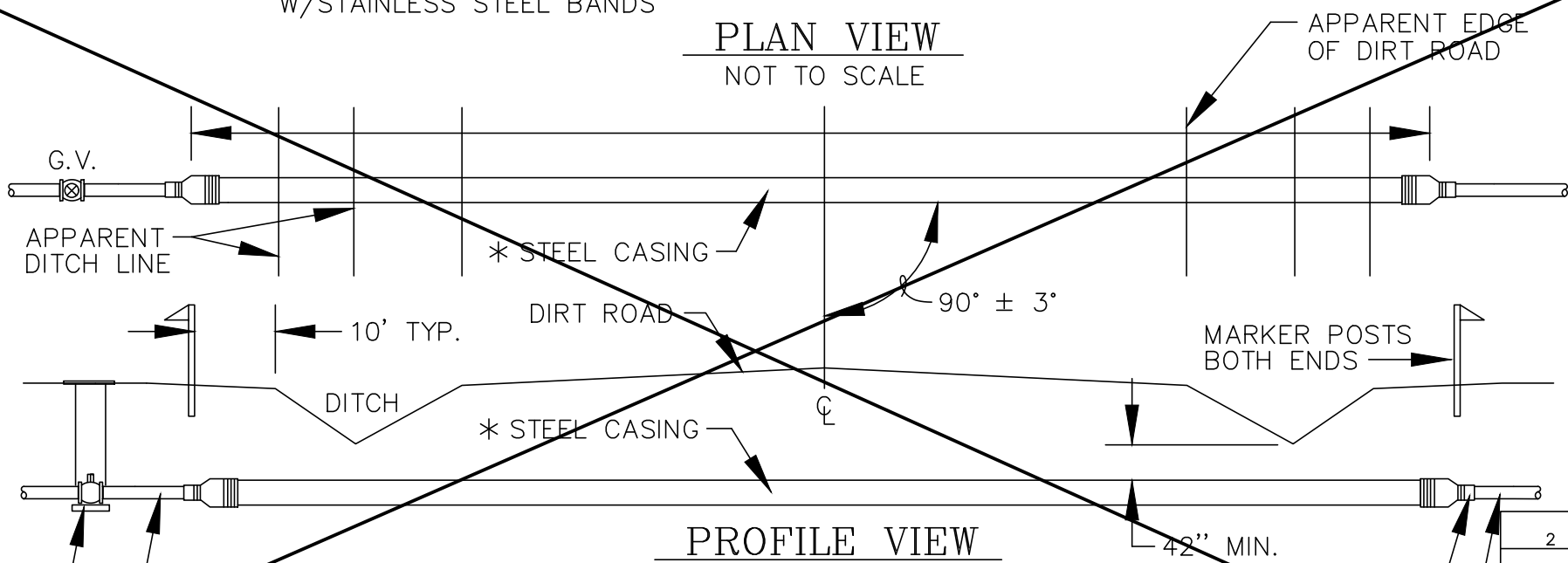
PROFILE VIEW

ROAD CROSSING (TYP.)
ROAD BORING
NOT TO SCALE

SEAL BOTH ENDS WITH PLASTIC SHEET COVERING STRAPPED AROUND PIPE W/STAINLESS STEEL BANDS

PLAN VIEW

NOT TO SCALE



PROFILE VIEW

OPEN CUT TRENCH
ROAD CROSSING (TYP.)
NOT TO SCALE

PVC WATER MAIN
GATE VALVE ON UPSTREAM SIDE

NOT USED.
ONLY A BORED ROAD CROSSING WILL BE ACCEPTED.

EXTEND CASING 10' PAST THE DITCH-LINE IF SCHOOL BUS ROUTE

PVC WATER MAIN

PHX AREA IHS NOTES:
SEAL THE CASING ENDS TO THE CARRIER PIPE WITH RUBBER END SEAL. CASCADE MODEL CCES AS IN CASING DETAIL.

NOTES:

- SEE GATE VALVE & ~~TEE~~ THRUST BLOCK DETAIL W-16 & W-11. RESTRAINT DETAILS ON SHEETS 20 & 21
- BACKFILL SHALL BE COMPACTED TO 95% OF STANDARD PROCTOR DENSITY IN 6-INCH LIFTS.
- ROAD CROSSINGS UNDER PAVEMENT SHALL BE BORED BY MACHINE AND REMAINDER OPEN CUT.
- SEE ~~DETAIL W-24~~ FOR PVC PIPE SKID INFORMATION.
- THE LIMIT OF CASING FOR ROADS THAT HAVE ROW MUST BE ROW TO ROW UNLESS PERMISSION FOR LESS CASING IS GRANTED.
- INSTALL 1 MARKER AT END OF CASING AND 2 FOR GATE VALVES.

* CONDITIONS:

- FOR BIA ROADS WITH FORMAL OR NON-FORMAL RIGHTS-OF-WAY ONLY STEEL OR CORRUGATED GALVANIZED STEEL CASING IS ALLOWED.
- FOR COUNTY ROADS CASINGS SHALL ADHERE TO SPECIFIC COUNTY REQUIREMENTS.

REVISION	DATE	BRIEF	BY
2	08/13	MODIFIED PER BIA LETTER DATED 07/18/13	WZS
1	7/99	STANDARDIZED	B.M.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE
NAVAJO NATION

NAVAJO NATION,
STANDARD DRAWING NO. W-35
ROAD CROSSING DETAILS

OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING
NAVAJO AREA OFFICE, WINDOW ROCK, ARIZONA

DRAWN BY: L.S.	CHECKED BY: P.S.	APPR. BY: P.S.	AUTOCAD
DATE: 12/92	DATE: 12/92	DATE: 12/92	DRAWING

INT.	REVISIONS	DATE



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HEALTH & ENGINEERING
HOPI HEALTH CARE CENTER
P.O. BOX 4000
POLACCA, AZ 86042
(928) 737-8000



THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
ROAD CROSSING
PH 15-U77

FILE NAME: UMUN-C-DTWATE
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

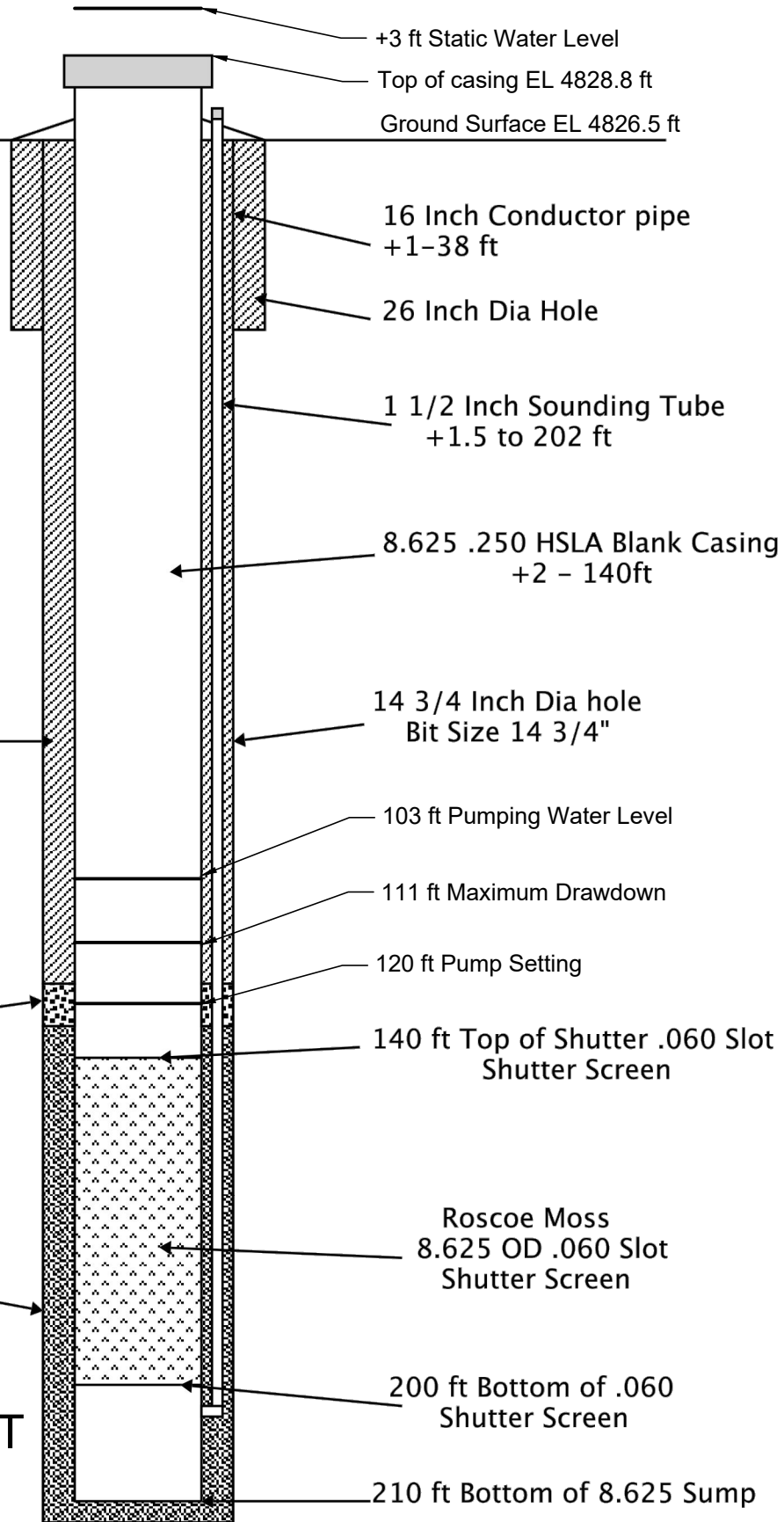
DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____

PASTURE CANYON WELL 5 - AS BUILT



Pasture Canyon Well 5
 Date Started 11/7/18
 Date Completed 11/10/18

Pasture Canyon Well 5
 GPS Lat: 36.127347 N
 Lon: -111.210859 W
 Total depth 210 ft
 8.625 Blank Casing +18"-200
 Shutter Screened 140 to 200



DRAWING NOT TO SCALE

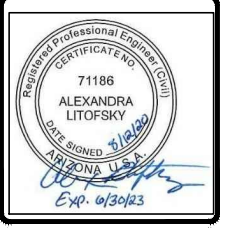
TEST PUMPING SUMMARY FROM WELL COMPLETION REPORT

STEP-DRAWDOWN TEST
 MAXIMUM DRAWDOWN: 111 FT
 40 GPM DURING 36 HOURS OF PUMPING

CONSTANT RATE TEST
 103 FT BTOC AFTER 36 HOURS PUMPING AT 41.6 GPM
 SPECIFIC CAPACITY: 0.4 GPM/FT

ANALYSIS
 MAXIMUM OPERATING RATE: 45 GPM
 CALCULATED WELL EFFICIENCY: 73%
 AQUIFER TRANSMISSIVITY (T): 686.4 GPD/FT (91.75 FT²/D)
 HYDRAULIC CONDUCTIVITY (K): 1.5 FT/D

INT.	REVISIONS	DATE



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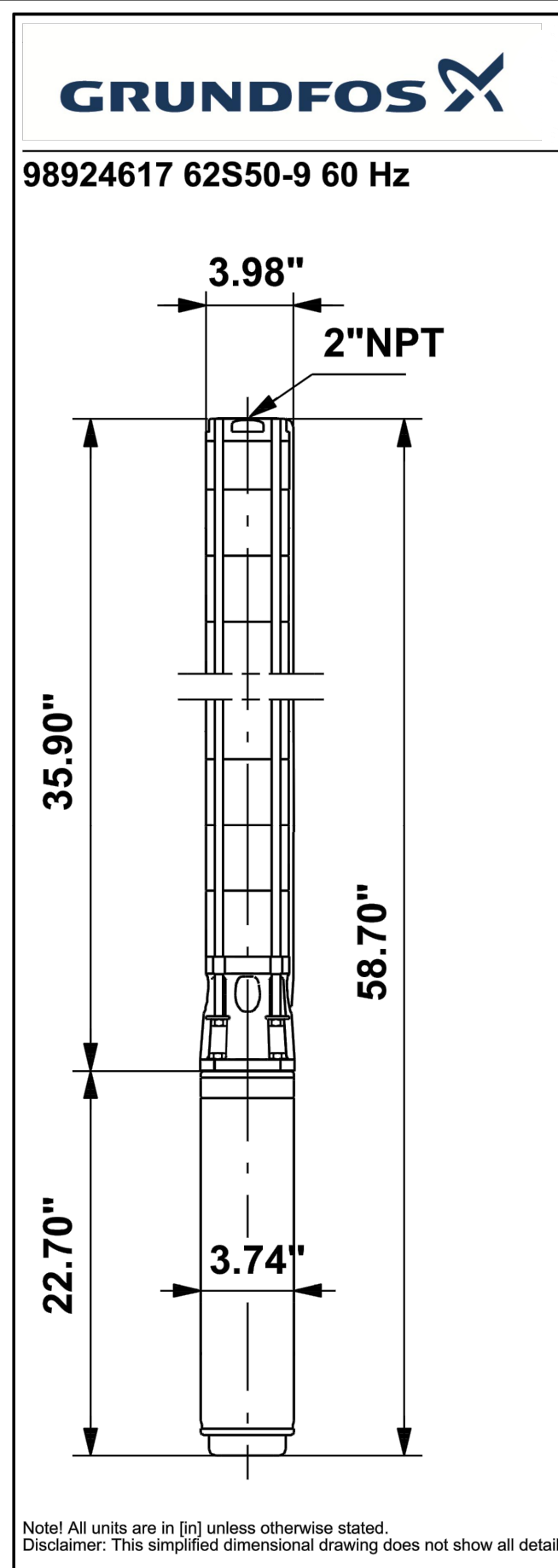
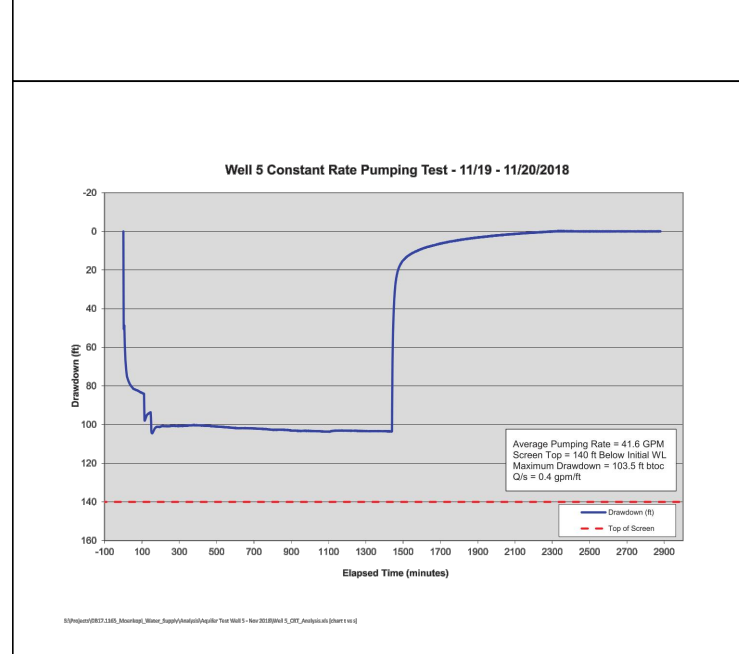
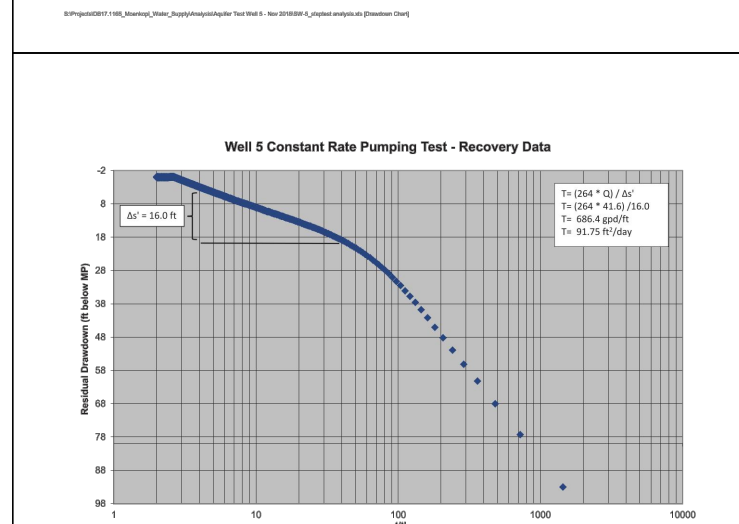
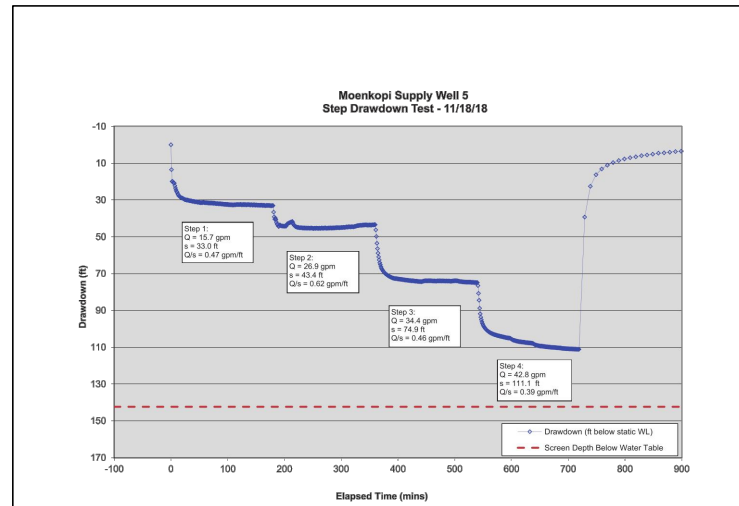
THE HOPI TRIBE
 UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
 NEW N-AQUIFER WELL CONNECTION
 PASTURE CANYON WELL 5 - AS BUILT
 PH 15-U77

FILE NAME: UMUN-C-WELL
 EA NUMBER: 02-20
 PROJ ENG: ALEXANDRA LITOPSKY

DRAWN BY: _____ DATE: 04/22/2019
 CHECKED BY: _____ DATE: _____
 APPROVED BY: _____ DATE: _____

PUMP TABLE

PUMP DATA	
ELECTRICAL SOURCE	APS
PHASE	3
VOLTAGE	440-460 V
POWER	5 HP
MOTOR	MS4000
GRUNDFOS PUMP ODEL	62S50-9
PUMP NUMBER	98924617
PUM OUTLET	2 IN NPT
MOTOR DIAMETER	4 IN
MOTOR SPEED	3460-3470 RPM
WELL DATA	
WELL DEPTH	209.0 FT
STATIC DEPTH (ARTESIAN)	-3.2 FT
PUMP DEPTH	120.0 FT
PUMPING DRAWDOWN	103 FT
MAXIMUM DRAWDOWN	111 FT
PRODUCTION PUMPING RATE	40 GPM
MAXIMUM PUMPING RATE	45 GPM
CONSTANT RATE TEST PUMPING	36 HOURS
SPECIFIC CAPACITY	0.4 GPM/FT
HYDRAULIC CONDUCTIVITY	1.5 FT/DAY
WELL CAP ELEVATION	4828.80 FT
WELL GROUND ELEVATION	4826.50 FT
STATIC WATER ELEVATION	4829.70 FT
PUMPING WATER ELEVATION	4723.50 FT
PUMP ELEVATION	4706.50 FT
SYSTEM DATA	
TANK HEIGHT	38.0 FT
TANK GROUND ELEVATION	4903.87 FT
OPERATING POINT (ONE WELL)	
SYSTEM FLOW	40.0 GPM
SYSTEM HEAD	229.2 FT
PUMP FLOW	42.6 GPM
PUMP HEAD	228.1 FT
PUMP EFFICIENCY	63.6 %
OPERATING POINT (TWO WELLS)	
SYSTEM FLOW	80.0 GPM
SYSTEM HEAD	230.5 FT



INT.	
REVISIONS	
DATE	

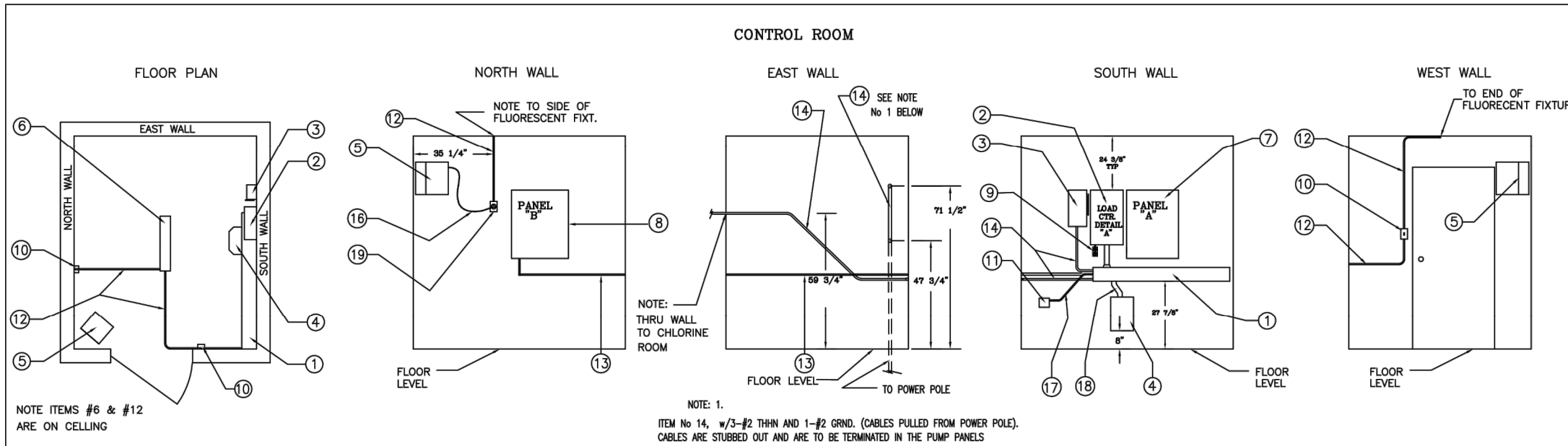
**INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL
HEALTH & ENGINEERING**

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POLACCA, AZ 86042
(928) 737-8000

<p>THE HOPI TRIBE UPPER MOENKOPI - COCONINO COUNTY, ARIZONA NEW N-AQUIFER WELL CONNECTION PUMP TABLE PH 15-U77</p>	<p>FILE NAME: UMUN-M-DTARCH EA NUMBER: 02-20 PROJ ENG: ALEXANDRA LITOFSKY</p>
DRAWN BY: _____	DATE: 04/22/2019
CHECKED BY: _____	DATE: _____
APPROVED BY: _____	DATE: _____

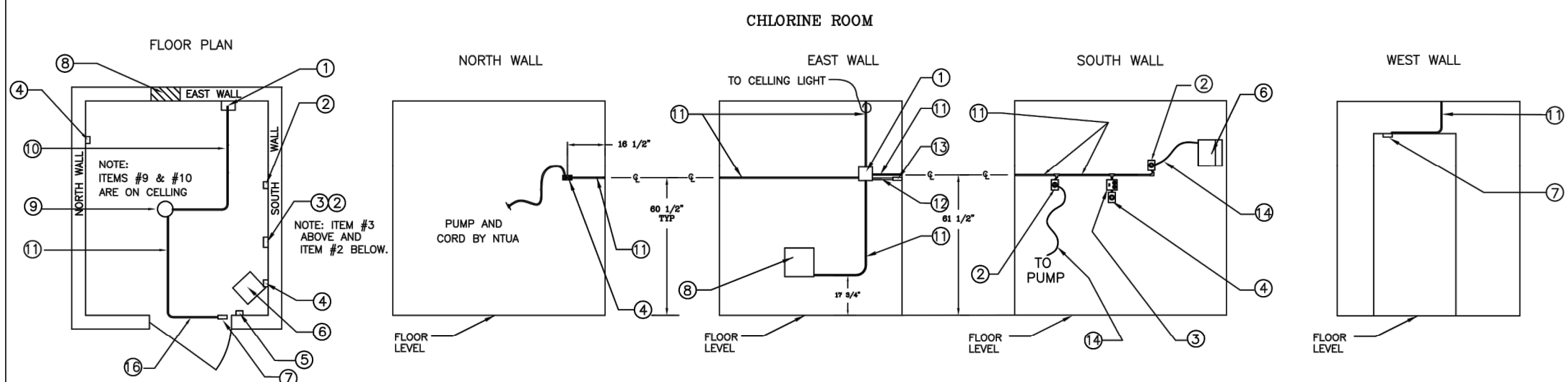
M-601
SHEET 38 OF 44

PUMP HOUSE LAYOUT



BILL OF MATERIAL CONTROL ROOM

ITEM	DESCRIPTION	QTY.	BRAND, MODEL, SIZE
1	GUTTER	1	6 x 60" x 6-3/8
2	LOAD CENTER W/100 AMP MAIN BREAKER	1	SQUARE D Q 016M 100 RB 22-1/8 x 14-3/8 x 5-1/4
3	DISC SW W/HANDLE W/FRS-30K FUSES	1	SQUARE D H 361 NR8 15-1/8 x 6-3/8 x 4-1/4
4	TRANSFORMER	1	ACME # T253517-3S 15 x 12 x 12 15KVA, 3PH, 460/240-120 VAC
5	HEATER, 220V, 4000 WATT	1	DAYTON # 3U652 11 x 10-1/2 x 9-3/4
6	FLUORESCENT LIGHT	1	4-1/2 W x 48 LONG
7	PROPOSED PANEL "A"	1	HONEYWELL # L404B-1353 4-1/2 x 3 x 2
8	PROPOSED PANEL "B"	1	SAGINAW # SCE-362410LP 36H x 24W x 100 NEMA 12
9	DUPLEX RECP - 120V	1	4-1/2 x 3 x 2
10	LIGHT SWITCH	1	4-1/2 x 3 x 2
11	PRESSURE SWITCH, DPDT	1	HONEYWELL # L404B-1353 4-1/2 x 3 x 2
12	1/2" RIDGID CONDUIT	As Req	X
13	3/4" RIDGID CONDUIT	As Req	X
14	1" RIDGID CONDUIT	As Req	X
15	2" RIDGID CONDUIT	As Req	X
16	# 14/3 SJT CORD	As Req	X
17	1/2" SEALTITE	As Req	X
18	2" SEALTITE	As Req	X
19	SINGLE RECP - 220V	1	4-1/2 x 3 x 2

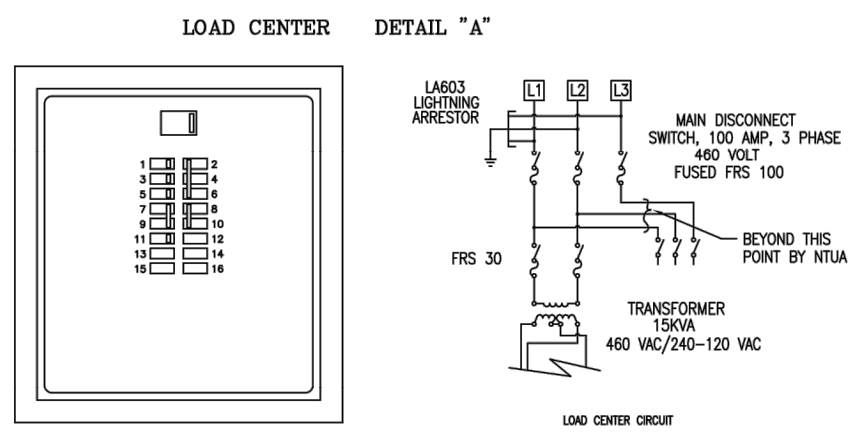


BILL OF MATERIAL CHLORINE ROOM

ITEM	DESCRIPTION	QTY.	BRAND, MODEL, SIZE
1	JCT BOX	1	6 x 6 x 4
2	ONE GANG REC. BOX, 220V	1	4-1/2 x 3 x 2
3	TWO GANG DUP RECP W/SP SW	1	4-1/2 x 4-1/2 x 2
4	ONE GANG RECP BOX, 120V	1	4-1/2 x 3 x 2
5	ONE GANG SW BOX, S/P	1	4-1/2 x 3 x 2
6	HEATER, 220V	1	DAYTON # 3U652 11 x 10-1/2 x 9-3/4
7	DOOR SWITCH (LIMIT) FOR EXHAUST FAN	1	CUTLER HAMMER # E50 AR/E50 KL25 4 x 1-1/2 x 2
8	EXHAUST FAN, (BY CUSTOMER)	1	12-1/2 x 12-3/4 x THRU WALL
9	VAPOR TITE LIGH FIXT, 100W	1	X
10	1/2" RIDGID CONDUIT	As Req	X
11	3/4" RIDGID CONDUIT	As Req	X
12	1" RIDGID CONDUIT	As Req	X
13	1" SEALOFF (To Ctrl Room)	As Req	X
14	#16/3 S/O CORD	As Req	X
15	# 14/3 SJT CORD	As Req	X
16	1/2" SEALTITE	As Req	X

LOAD CENTER CIRCUITS, BREAKER LOCATION & BKR/CAT No.

SPACE No.	BREAKER FOR	AMP	POLES	SPACE No.	BREAKER FOR	AMP	POLES
1	PUMP CONTRL	00 115	SP	2	BOOSTER		
3	CONTROL RM LIGHTS	00 115	SP	4	CHEMICAL PUMPS	00 315	3P
5	CHLORINE RM LIGHTS	00 115	SP	6			
7	CONTROL ROOM HEATER	00 215	DP	8	CHLORINE ROOM HEATER	00 215	DP
9				10			
11	RECEPTACLE - 120 V	00 115	SP	12	SPACE		
13	SPACE			14	SPACE		
15	SPACE			16	SPACE		



REVISION	DATE	DESCRIPTION	BY

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE
NAVAJO NATION**

PUMP HOUSE LAYOUT

PUBLIC LAW 86-121
OFFICE OF ENVIRONMENTAL HEALTH AND ENGINEERING
NAVAJO AREA INDIAN HEALTH SERVICE

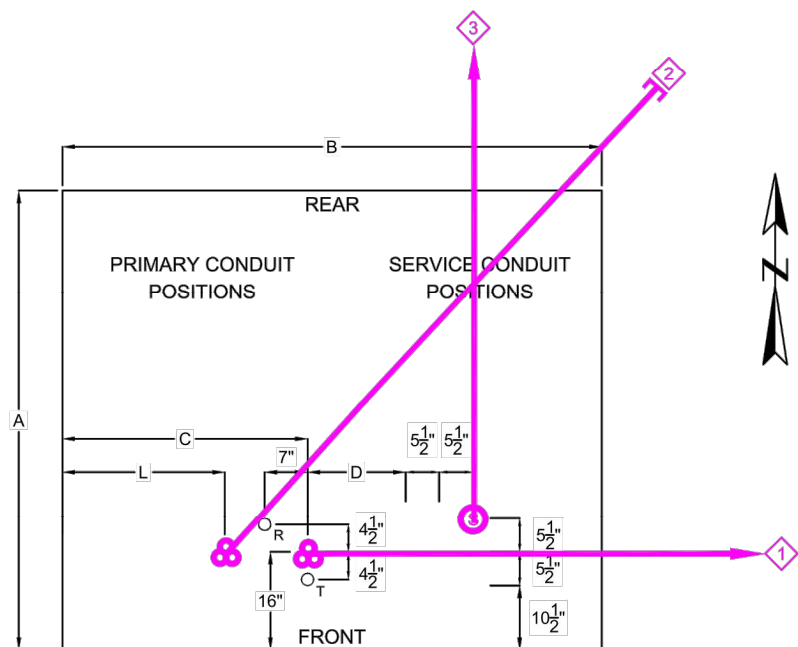
DRAWN BY: [Signature]	CHECKED BY: [Signature]	SURVEYED BY: [Signature]	AUTOCAD DRAWING
DATE: 9/19/97	DATE: 1/16/98	DATE: [Blank]	
FARMINGTON FIELD OFFICE	FLEMING: CARSON PUMP	BRIS: [Blank]	SHEET 1 OF 2 TOTAL SHEETS
FARMINGTON, NEW MEXICO	UPDATED: 1/16/98		

<p>INDIAN HEALTH SERVICE OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING</p> <p>HOPI HEALTH CARE CENTER P.O. BOX 4000 POLACCA, AZ 86042 (928) 737-8000</p>	<p>THE HOPI TRIBE UPPER MOENKOPI - COCONINO COUNTY, ARIZONA NEW N-AQUIFER WELL CONNECTION PUMP HOUSE LAYOUT PH 15-U77</p> <p>FILE NAME: UMUN-E-DTELEBC EA NUMBER: 02-20 PROJ ENG: ALEXANDRA LITOFSKY</p> <p>DATE: 04/22/2019 DATE: [Blank] DATE: [Blank]</p>
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E-601
SHEET 40 OF 44

APS TRANSFORMER PAD AND CONDUIT

SERVICE SECTION SIZE (AMPS)	SERVICE VOLTAGE	QUANTITY and SIZE OF CONDUITS			PAD SIZE and CONDUIT LOCATION (inches)				
		PRIMARY	SECONDARY	1-4"	A	B	C	D	L
200	277/480	3-2"	3-2"	1-4"	75	88	40	16	26-1/2



CABLE & CONDUIT NOTES:

- ① C2"(3), 90°, 36"R SWEEPS TO SC803786 3-UA1/OT TO SC803786
- ② C2"(3), 90°, 36"R SWEEPS STUBBED 25' NE FUTURE
- ③ C4"(1), 90°, 36"R SWEEPS TO 200A SES 1-UA4/ODV TO 200A SES

GENERAL NOTES:

1. ALL TRANSFORMER LOCATIONS SHALL COMPLY WITH ALL CODES, ORDINANCES, AND REGULATIONS WITHIN THE STATE OF ARIZONA OR OTHERWISE SPECIFIED BY APS.
2. CUSTOMER TO PROVIDE ALL WORK INVOLVED WITH THE PAD AND CONDUITS.
3. ALL CONDUITS MUST BE INSPECTED AND APPROVED PRIOR TO BACKFILLING.
4. ALL CONCRETE FORMS AND CONDUITS AND REBAR (IF REQUIRED) MUST BE IN PLACE AND APPROVED PRIOR TO POURING PAD.
5. ANY VARIATIONS FROM THE ABOVE REQUIREMENTS MUST BE GIVEN IN WRITING AND SIGNED BY AN APS REPRESENTATIVE.
6. A MINIMUM 24-HOUR NOTICE IS REQUIRED FOR INSPECTIONS.
 R = GROUND ROD SLEEVE, NOTE 7.
 T = COMMUNICATION GROUND SLEEVE, NOTE 8.
 (S) = 5" SLEEVE LOCATION 18" DEEP

PAD SPECIFICATIONS:

1. THE FOLLOWING MINIMUM UNOBSTRUCTED CLEARANCES FROM THE EDGE OF THE PAD ARE REQUIRED:
 HORIZONTAL CLEARANCES: 2' TO THE REAR AND SIDES 10' TO THE FRONT
 VERTICAL CLEARANCES: 30' ABOVE THE PAD AND HORIZONTAL CLEARANCE AREAS
 REFER TO T&D STANDARDS 1278-1279 FOR ALL APPLICABLE CLEARANCE REQUIREMENTS.

2. ALL BACKFILL BENEATH THE PAD SHALL BE COMPACTED TO A MINIMUM OF 90 PERCENT OF MAXIMUM DENSITY, AND SHALL NOT CONTAIN ROCKS LARGER THAN 1-1/2 INCHES IN THEIR GREATEST DIMENSION. BACKFILL MATERIAL SHALL CONTAIN ENOUGH FINES TO FILL ALL VOIDS.

ONE-SACK ABC SLURRY SHALL NOT BE INSTALLED BENEATH EQUIPMENT PADS. IF SLURRY BACKFILL IS INSTALLED BENEATH EQUIPMENT PADS, ONE OF THE FOLLOWING OPTIONS SHALL BE UTILIZED:

- OPTION 1:
ONE-SACK CEMENT SAND SLURRY AS SPECIFIED IN T&D STANDARDS 8601, 19.5
- OPTION 2:
- | | |
|-----------------------|--------------|
| FLYASH, TYPE F | 250 POUNDS |
| WATER | 50 GALLONS |
| FINE AGGREGATE (SAND) | 3,117 POUNDS |
- OPTION 3:
- | | |
|-----------------------|--------------|
| CEMENT | 52 POUNDS |
| FLYASH, TYPE F | 240 POUNDS |
| WATER | 55 GALLONS |
| FINE AGGREGATE (SAND) | 2,820 POUNDS |

CONCRETE MIXING TICKET MUST BE PROVIDED DESCRIBING THE MATERIAL, OTHERWISE THE MATERIAL IS UNACCEPTABLE.

3. PAD TO BE MADE IN ONE CONTINUOUS POUR OF CONCRETE, 3000 PSI AT 28 DAYS, 3/8 INCH AGGREGATE, 3 TO 5-INCH SLUMP. TOP OF PAD TO BE TROWELED SMOOTH AND LEVEL. SURFACE IS TO HAVE A LIGHT BROOMED FINISH AND ALL EXPOSED EDGES ARE TO BE ROUNDED TO A 3/4-INCH RADIUS.

REFER TO THE MATERIAL SPECIFICATIONS 7990 FOR COMPLETE PAD SPECIFICATIONS.

4. REINFORCING STEEL IS REQUIRED NO

REINFORCEMENT IS NOT REQUIRED IF PAD IS POURED-IN-PLACE IN A LOCATION UNLIKELY TO BE UNDERMINED BY DRAINAGE, ETC.

5. MINIMUM REQUIRED PAD THICKNESS IS 6 INCHES.
6. TOP OF PAD TO BE A MINIMUM OF 4 INCHES ABOVE SURROUNDING FINISHED GRADE.
7. R--PROVISION FOR GROUND ROD--INSTALL SLEEVE THROUGH PAD, 1-INCH MINIMUM I.D., WITH NO OBSTRUCTION BENEATH. ALTERNATE SLEEVE LOCATIONS ARE ALONG AN IMAGINARY CENTER LINE BETWEEN THE PRIMARY DUCTS. LOCATION TO BE BASED ON AVOIDING CONDUIT SWEEPS WHEN DRIVING GROUND ROD.
8. T--PROVISION FOR COMMUNICATIONS GROUND--INSTALL SLEEVE THROUGH PAD, 1 INCH MINIMUM I.D., WITH NO OBSTRUCTION BENEATH. LOCATION TO BE BASED ON AVOIDING CONDUIT SWEEPS.

CONDUIT SPECIFICATIONS:

1. ALL SERVICE CONDUCTORS SHALL BE INSTALLED IN RIGID NON-METALLIC CONDUITS FROM TRANSFORMER TO SERVICE ENTRANCE SECTION.
2. ALL PRIMARY CONDUCTORS SHALL BE INSTALLED IN RIGID NON-METALLIC CONDUITS.
3. RIGID NON-METALLIC CONDUIT IS DEFINED AS PVC AND SHALL BE MARKED AS FOLLOWS:

SWEEPS -	PVC SCH 40 NEMA TC-2
STRAIGHT SECTIONS -	PVC DB L00 MODULUS 400,000 PSI ASTM F-512*
	PVC DB 120 MODULUS 400,000 PSI ASTM F-512
	PVC SCH 40 NEMA TC-2
	PVC SCH 80 NEMA TC-2
4. ONLY GOOD FOR CONDUIT 4" OR LARGER.

APPLY PURPLE PRIMER/CLEANER ASTM F656 TO ALL PVC JOINTS PRIOR TO APPLYING A COATING OF GRAY PVC TO PVC CEMENT ASTM 02564.

FOR INSPECTION CONTACT: WILL WARD	
PHONE:	928-699-2646
INSPECTION IS REQUIRED AFTER CONDUITS ARE INSTALLED, AND BEFORE PAD IS POURED.	
INSPECTED BY:	DATE:
FINAL INSPECTION BY:	DATE:

TX803787

APS CONSTRUCTION SYMBOL



SOURCE: SC803786

5. IF STEEL SWEEPS, BENDS AND CONDUIT ARE USED; THEY SHALL BE GALVANIZED PER ANSI C80.1 AND HALF-LAPPED WITH SUITABLE 20-MIL TAPE, TO A TOTAL THICKNESS OF 40 MILS. POLYKEN #900 2" BLACK TAPE (OR EQUIVALENT) SHALL BE HALF-LAPPED OVER POLYKEN #927 BLACK PRIMER (OR EQUIVALENT).
6. ALL NON-METALLIC CONDUIT SWEEPS AND ELBOWS SHALL HAVE INTERNALLY CHAMFERED ENDS.
7. UNLESS OTHERWISE SPECIFIED, SWEEPS, BENDS AND CONDUITS SHALL BE 4-INCH IPS WITH MINIMUM RADIUS SWEEPS OF 36 INCHES FOR PRIMARY AND 24 INCHES FOR SERVICE. EXCEPTION: USE 36" SWEEPS FOR 750 MCM SECONDARY UNLESS OTHERWISE SPECIFIED.
8. ALL SWEEPS INTO TRANSFORMER PAD SHALL EXTEND A MINIMUM OF 1 INCH AND A MAXIMUM OF 2 INCHES ABOVE THE TOP OF THE PAD UPON CABLE INSTALLATION. CONDUIT ENDS SHALL BE CAPPED OR PLUGGED, NOT GLUED. NON-EXPOSED CONDUITS STUBBED OUT FOR FUTURE EXTENSIONS SHALL BE PLUGGED.
9. PRIMARY CONDUITS SHALL BE INSTALLED WITH A MINIMUM COVER OF 36 INCHES; SERVICE CONDUITS SHALL BE INSTALLED WITH A MINIMUM COVER OF 24 INCHES, UNLESS OTHERWISE SPECIFIED. DIMENSIONS GIVEN ARE FROM FINAL GRADE TO THE TOP OF THE DUCT BANK.
10. WHERE SERVICE CONDUITS MUST BE INSTALLED DIRECTLY UNDER A BUILDING FOUNDATION, THE CONDUITS SHALL BE CONCRETE ENCASED AND THE TOP OF THE ENCASEMENT SHALL HAVE A MINIMUM OF 24 INCHES CLEAR SEPARATION BELOW THE STRUCTURE FOUNDATION. ENCASEMENT SHALL CONSIST OF A 3-INCH CONCRETE ENVELOPE.
11. THE CUSTOMER SHALL MANDRILL ALL CONDUITS AND IS RESPONSIBLE FOR THE USABILITY OF THE CONDUIT SYSTEM AT THE TIME APS INSTALLS CONDUCTORS.
12. PULL LINES SHALL BE PROVIDED BY APS AND INSTALLED BY THE CUSTOMER.
13. ARROWS, SHOWN ON PAD DETAIL (LEFT), INDICATE THE DIRECTION SWEEPS AND CONDUITS ARE TO BE POSITIONED.

JOB NUMBER	DATE	DESCRIPTION	REV BY

T 32.0N R 11.0E Sec 27 NW 1/4 MAP#

LOCATION: UPPER MOENKOPI
WELL #5
TUBA CITY, AZ.

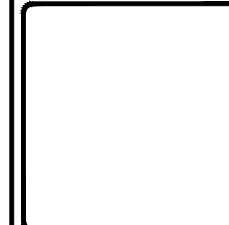
aps 7665 THRU 7667
3-PHASE TRANSFORMER
PAD AND CONDUIT DETAIL

WO#: WA495678	DATE: 06/04/2019
BY: JOHN WALKER	SCALE: NTS

FILENAME: TX803787

REV 01/25/12

INT.	REV.	DATE	BY	DESCRIPTION



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POLACCA, AZ 86042
(928) 737-6000



THE HOPI TRIBE
UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
APS TRANSFORMER PAD AND CONDUIT
PH 15-U77

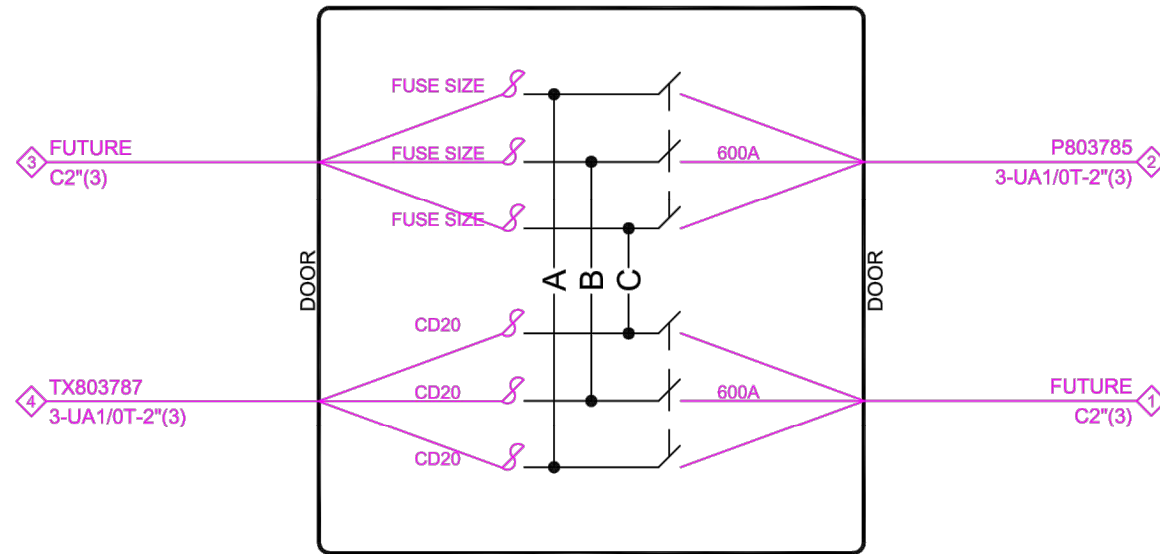
FILE NAME: UMUN-B-DTELEBC	DATE: 04/22/2019
EA NUMBER: 02-20	DATE: _____
PROJ ENG: ALEXANDRA LITOFSKY	DATE: _____

DRAWN BY: _____
CHECKED BY: _____
APPROVED BY: _____

APS SWITCHING CABINET

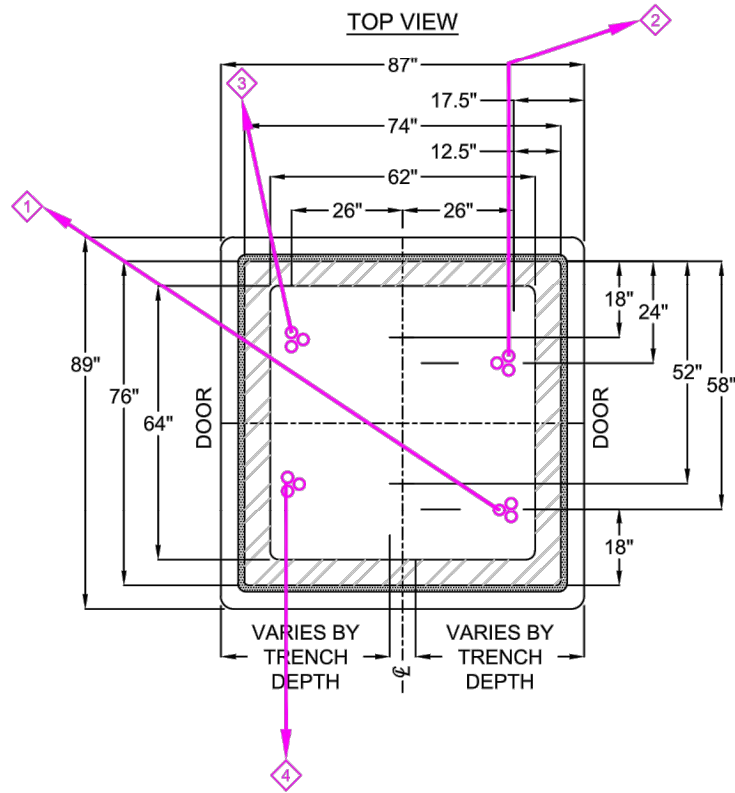
ELECTRICAL LAYOUT

DOORS OPEN NORTH & SOUTH

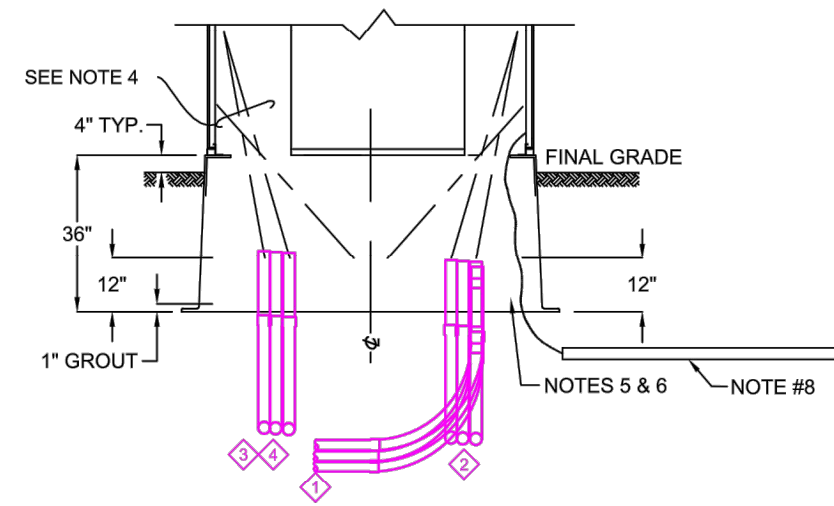


BOX PAD DETAILS

TOP VIEW

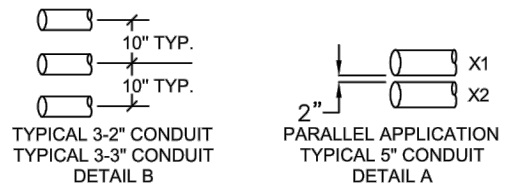


SIDE VIEW



SC803786

APS CONSTRUCTION SYMBOL



- LEGEND:**
- DIRECTION OF CONDUIT
 - ◇ CABLE & CONDUIT NOTES
 - CONDUIT LOCATIONS

BOX PAD INSTALLATION NOTES:

1. REFER TO APS T&D CONSTRUCTIONS STANDARDS FOR CONSTRUCTION & INSTALLATION OF THE CABINET.
2. CENTER PARALLEL CONDUITS OVER DIMENSION FOR SINGLE CONDUIT AS SHOWN IN DETAIL A.
3. CONDUIT SHOULD BE ALIGNED IN THE WINDOW THE CABLE WILL BE TERMINATED IN.
4. ALL CONDUIT AND SWEEPS ENTERING THE BOX PAD FROM THE OPPOSITE SIDE OF THE BOX, EXCLUDING 90 DEGREE BENDS BELOW SAME WINDOW, SHALL HAVE A SLEEVE EXTENSION WHICH ALLOWS IT TO REST ON THE INSIDE LIP UNTIL SLURRY HAS SET.
5. ALL BACKFILL UNDER BOXPAD AND AROUND CONDUIT SWEEPS ENTERING THE BOXPAD SHALL BE 1-SACK SAND SLURRY.
6. DIMENSIONS ARE SHOWN FROM THE TOP OUTSIDE EDGE OF BOX.
7. A 2-INCH MINIMUM DIAMETER DRAIN IS REQUIRED IN ALL BOX PADS AT THE LOWEST POINT TO A MINIMUM DEPTH OF 1-INCH BELOW SLURRY.
8. INSTALL APS PROVIDED & APPROVED GROUNDING.

CABLE & CONDUIT NOTES:

- ◇ 1 C2"(3), 90°, 36"R SWEEPS STUBBED 25' NE FUTURE
- ◇ 2 C2"(3), 90°, 36"R SWEEPS TO P803785 3-UA1/0T TO P803785
- ◇ 3 C2"(3) 90°, 36"R SWEEPS STUBBED 25' NE FUTURE
- ◇ 4 C2"(3), 90°, 36"R SWEEPS TO TX803787 3-UA1/0T TO TX803787

MISCELLANEOUS NOTES:

JOB NUMBER	DATE	DESCRIPTION	REV BY

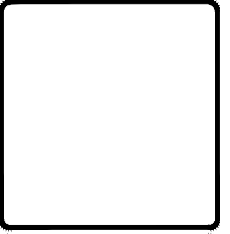
T 32.0N R 11.0W Sec 27 NW 1/4 MAP#

LOCATION: UPPER MOENKOPI
WELL #5
TUBA CITY, AZ.

	8475.B09 (2-WAY) DEADFRONT 12kV SWITCHING CABINET DETAIL	
	WO#: WA495678	DATE: 06/03/2019
BY: JOHN WALKER	SCALE: NTS	
FILENAME: SC803786		

REV 09/28/09

INT.	REVISIONS	DATE



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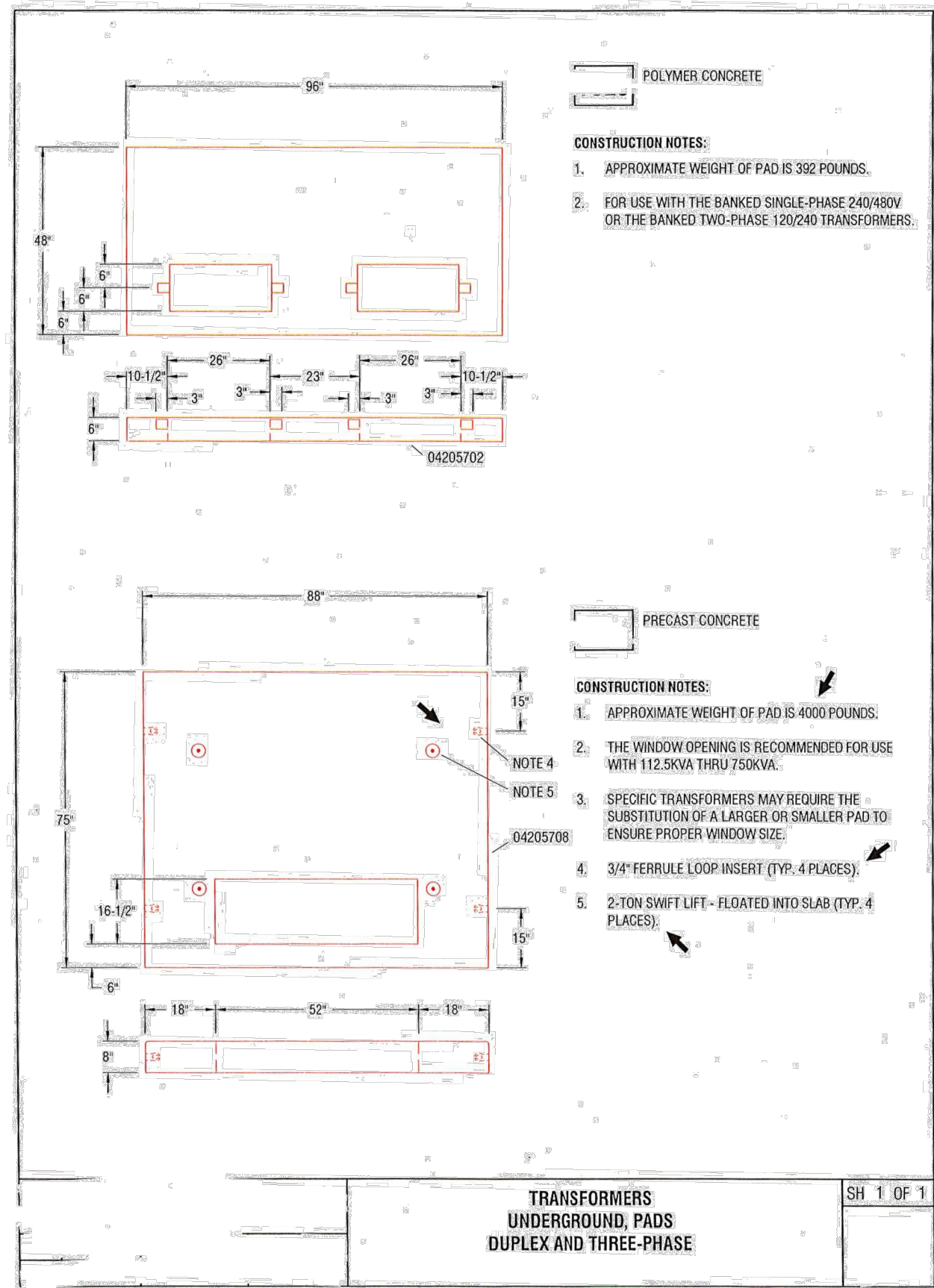
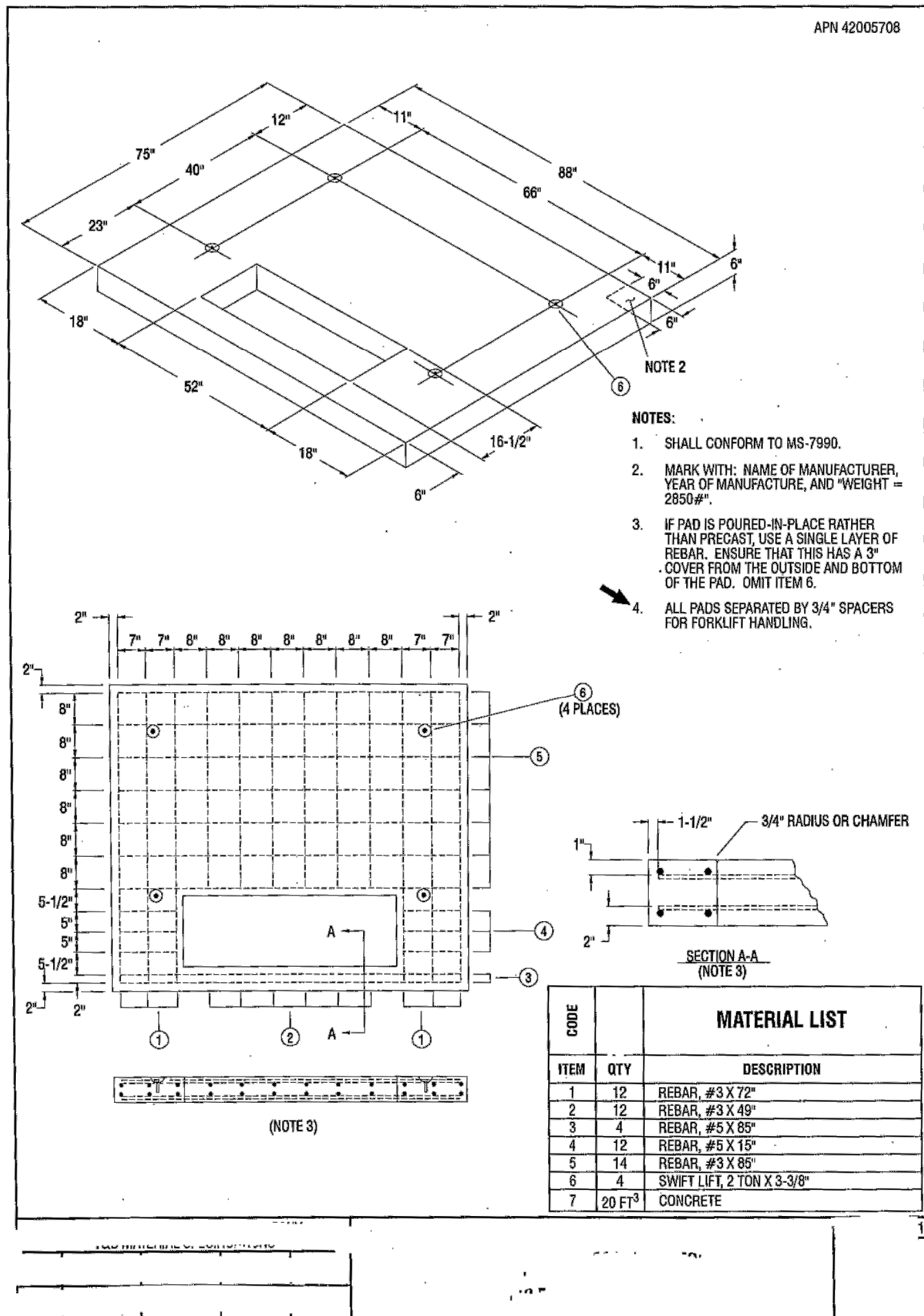
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UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
APS SWITCHING CABINET
PH 15-U77

FILE NAME: UMUN-E-DTELEBC	DATE: 04/22/2019
EA NUMBER: 02-20	DATE: _____
PROJ ENG: ALEXANDRA LITOFSKY	DATE: _____
DRAWN BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
APPROVED BY: _____	DATE: _____

APS CONCRETE PAD



DATE	REVISIONS	INT.

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UPPER MOENKOPI - COCONINO COUNTY, ARIZONA
NEW N-AQUIFER WELL CONNECTION
APS CONCRETE PAD
PH 15-U77

FILE NAME: DMUN-B-DTELEBC
EA NUMBER: 02-20
PROJ ENG: ALEXANDRA LITOFSKY

DRAWN BY: _____ DATE: 04/22/2019
CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____