

BOONE COMMUNITY SCHOOL DISTRICT

BOONE CSD MIDDLE SCHOOL TO LEDGES ELEMENTARY SCHOOL FIBER INSTALLATION

1640 1ST ST. TO 1805 HANCOCK DR. BOONE COUNTY, BOONE, IOWA

UTILITY
INFRASTRUCTURE
SOLUTIONS

hbk

ENGINEERING

509 SOUTH GILBERT STREET
IOWA CITY, IA 52240
PHONE: (319) 338-7557
STATE OF IOWA, DEPARTMENT OF LABOR
REGULATION NO. 00527328

PROJECT INFORMATION

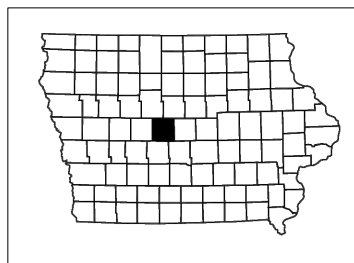
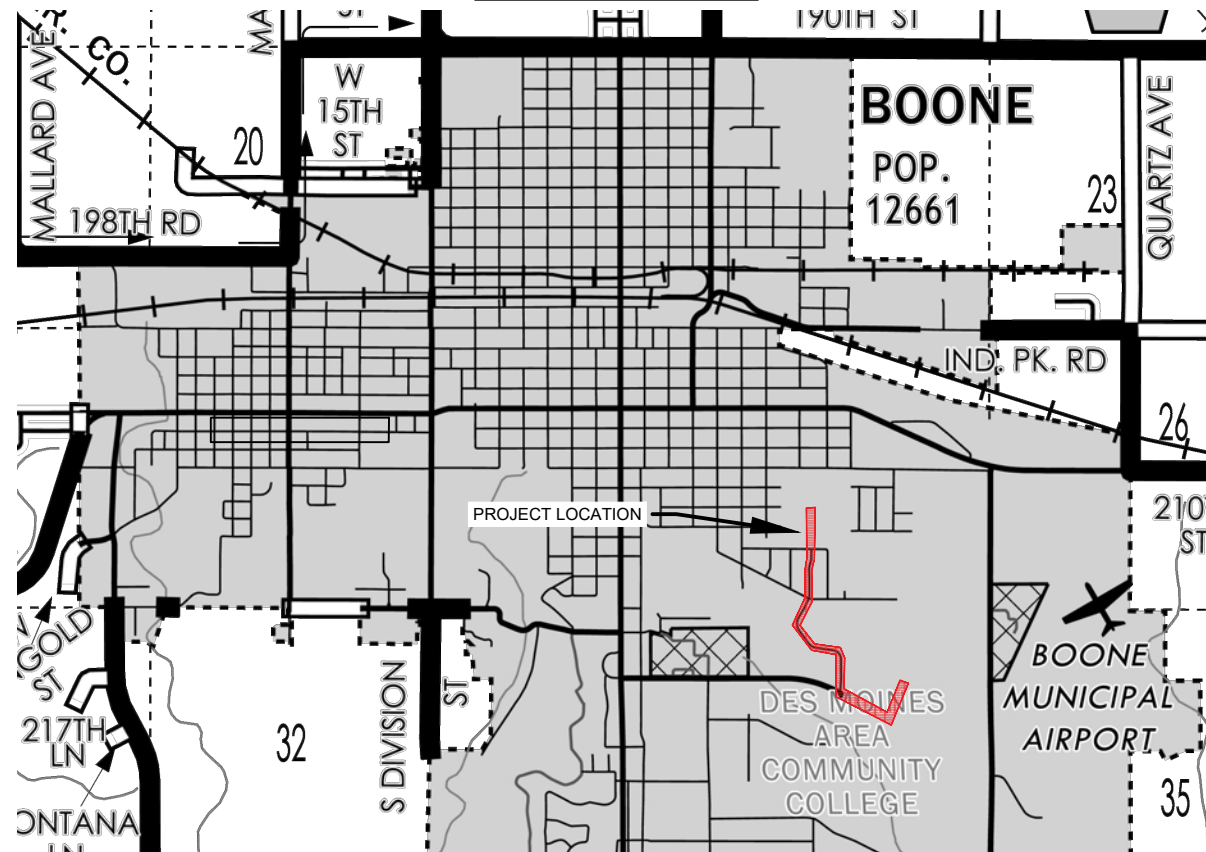
SCOPE OF WORK:
THIS PROJECT IS FOR NEW CONDUIT AND FIBER OPTIC CABLE INSTALLATION FOR THE BOONE COMMUNITY SCHOOL DISTRICT FROM THE EXISTING MIDDLE SCHOOL TO THE NEW LEDGES ELEMENTARY SCHOOL. IT WILL INVOLVE APPROXIMATELY 5,272' OF NEW CONDUIT INSTALLATION, 6,675' OF THE NEW CABLE INSTALLATION IN NEW CONDUITS AND EXISTING BUILDING ENTRY CONDUITS PER THE DETAILED PLAN SHEETS

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LOCATION MAP



INDEX OF SHEETS

SHEET	TITLE
1	TITLE SHEET
2	ENGINEER GENERAL NOTES AND LEGEND
3	ICN GENERAL NOTES
4	MATERIALS
CIVIL	
5-15	PLAN SHEETS
16-21	DETAIL SHEETS

UTILITY CONTACTS

COMPANY	CONTACT NAME	PHONE	PHONE
ALLIANT ENERGY (ANW)	LAURA BARR	(800) 255-4268	LOCATE_IPL@ALLIANTENERGY.COM
BOONE COMMUNITY SCHOOL DISTRICT (BCS)	LEVI BABER	(515) 433-0901	DOT@BOONE.K12.IA.US
BOONE, CITY OF (BOO)	ED HIGGINS	(515) 433-0600	EDHIGGINS@CITY.BOONE.IA.US
MEDIACOM (BOONIA1)	KEVIN COLLINS	(515) 246-6668	KCOLLINS1@MEDIACOMCC.COM
CENTURYLINK (CTLIA01)	SADIE HULL	(918) 547-0147	SADIE.HULL@LUMEN.COM
IOWA COMMUNICATIONS NETWORK (ICN)	SHANNON MARLOW	(800) 572-3940	ICNOUTSIDEPLANTIOWAONECALL@IOWA.GOV
OGDEN TELEPHONE COMPANY (OTC)	JOEL MUNSON	(515) 275-2050	OGDENTELJOEL@NETINS.NET

*THIS CONTACT LIST IS NOT ALL-INCLUSIVE. CONTRACTOR IS RESPONSIBLE FOR REQUESTING LOCATES OF ALL UTILITIES.

NOTE:
CALL 811 FOR LOCATION OF UNDERGROUND TELEPHONE, ELECTRIC, GAS MAINS, CABLE TELEVISION AND OTHER UTILITIES.

EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND DRAINAGE STRUCTURES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS THE RESPONSIBILITY OF THE INDIVIDUAL CONTRACTORS TO EXACTLY LOCATE AND PROTECT EACH EXISTING UTILITY BEFORE AND DURING ACTUAL CONSTRUCTION.



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE



1	60% PLAN REVIEW	4/5/2023
2	90% PLAN REVIEW	4/20/2023
3	FINAL PERMIT PLANS	4/21/2023
4		

IOWA COMMUNICATIONS NETWORK
400 EAST 14TH STREET
GRIMES STATE OFFICE BUILDING
DES MOINES, IOWA 50319
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ENGINEER GENERAL NOTES AND LEGENED

ALL CONDUIT AND HANDHOLE INSTALLATIONS, REMOVALS, MODIFICATIONS, AND TEMPORARY WORK SHALL BE DONE ACCORDING TO THE FOLLOWING NON-INCLUSIVE CONDITIONS:

SECTION 1.0 SCOPE OF WORK

1.01 INSTALLATION DESCRIPTION:

INSTALL CONDUIT AND ALL RELATED APPURTENANCES FOR FIBER OPTIC CABLE INSTALLATION. SEE PLANS FOR EXACT LOCATION, LENGTHS, QUANTITIES, AND DIMENSIONS OF PROPOSE IMPROVEMENTS.

1.02 SEE SHEET 4 FOR LOCATION OF ENGINEER'S ESTIMATE OF MATERIALS.

1.03 THE CONTRACTOR SHALL PROVIDE ALL MATERIAL, EQUIPMENT, LABOR, INSTALLATION, RESTORATION, UTILITY RELOCATION CHARGES, JOB SITE DELIVERY COSTS AND INCIDENTALS TO COMPLETE THE DESCRIBED OR ILLUSTRATED WORK, UNDER THIS CONTRACT.

1.04 ANY CHANGE-ORDER REQUEST MUST BE PRESENTED IN WRITING TO THE OWNER'S REPRESENTATIVE AND APPROVED PRIOR TO PROCEEDING WITH THE REQUESTED CHANGE. DOCUMENTATION CONCERNING ANY AND ALL CHANGE ORDERS WILL BE REDUCED TO FORMAL RECORD, FILED WITH THE OWNER'S REPRESENTATIVE, AND BE MADE AVAILABLE FOR FUTURE REFERENCE.

1.05 THE CONTRACTOR SHALL PROVIDE A MINIMUM 48 HOUR ADVANCED NOTICE TO HBK ENGINEERING (319-338-7557) TO SCHEDULE A PRE-CONSTRUCTION WALK THROUGH WITH A HBK ENGINEERING REPRESENTATIVE. THIS WALK THROUGH MUST BE COMPLETED PRIOR TO THE COMMENCEMENT OF ANY WORK WITHIN THE LIMITS OF THIS PROJECT.

1.06 THE ENGINEER WILL NOT BE RESPONSIBLE NOR ASSUME ANY LIABILITY FOR NEGLIGENT ACTS OR ERRORS OF OMISSIONS OF ANY CONTRACTOR, ANY SUBCONTRACTOR, OR ANY OF THE CONTRACTOR'S OR SUBCONTRACTORS' AGENTS OR EMPLOYEES OR ANY OTHER PERSONS (EXCEPT ENGINEER'S OWN EMPLOYEES) AT THE PROJECT SITE OR OTHERWISE PERFORMING ANY OF THE WORK OF THE PROJECT. ANY CONTRACTOR OR SUBCONTRACTOR, AS WELL AS THE ENGINEER, WILL BE RESPONSIBLE FOR HIS OWN SAFETY PROGRAM. NEITHER THE PROFESSIONAL ACTIVITIES OF THE ENGINEER, NOR THE PRESENCE OF THE ENGINEER OR HIS OR HER EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE ANY CONTRACTOR OF HIS OR HER OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE ENGINEER AND HIS OR HER PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR OTHER ENTITY OR THEIR EMPLOYEES IN CONNECTION WITH ANY HEALTH OR SAFETY PRECAUTIONS.

SECTION 2.0 MATERIALS

2.01 ALL MATERIALS INSTALLED WITHIN THE LIMITS OF THIS PROJECT SHALL BE IN CONFORMANCE WITH STANDARD RECOMMENDATIONS OF THE NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA) AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).

2.02 ALL TRENCHED CONDUIT, ELBOWS, AND COUPLINGS SHALL BE HDPE UNLESS OTHERWISE NOTED. ALL BORED CONDUIT AND COUPLINGS SHALL BE HDPE SDR-13 UNLESS OTHERWISE NOTED.

2.03 JOB SITE MATERIAL WILL BE DELIVERED TO AND MAINTAINED AT THE STREET WORK AREAS IN A WELL MANAGED MANNER, TO MINIMIZE CONGESTION OR INCONVENIENCE TO OTHER WORKERS, OR CONTRACTORS WORKING UNDER ALTERNATE PERMITS.

SECTION 3.0 GENERAL NOTES

3.01 CONTRACTOR IS ADVISED TO READ ALL NOTES ON DRAWINGS, CAREFULLY.

3.02 THE CONTRACTOR SHALL VERIFY EXISTING STREET RIGHTS OF WAY TO THE EXTENT NECESSARY TO VERIFY PROPOSED WORK REMAINS WITHIN THESE RIGHTS OF WAY AND DOES NOT INFRINGE ON PRIVATE PROPERTY NOT OWNED BY THE OWNER.

3.03 SCALE FOR DRAWINGS IS FOR GENERAL INFORMATION ONLY. LOCATIONS AND DIMENSIONS SHALL BE TAKEN AS SHOWN AND THE DRAWINGS SHALL NOT BE SCALED.

3.04 CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL PUBLIC AND PRIVATE UTILITIES AS WELL AS CITY AND STATE AGENCIES.

3.05 INSTALL CONDUIT MINIMUM OF 10'-0" BELOW ALL WATERWAYS AND CULVERT CROSSINGS. CONTRACTOR TO VERIFY CULVERT DEPTH PRIOR TO CONDUIT INSTALLATION.

3.06 NUMEROUS ELEVATION CHANGES. TOPOGRAPHY LINES SHOWN ON DRAWING FOR REFERENCE ONLY.

3.07 DUE TO EXISTING FORESTED AREAS, SOME TREE REMOVAL AND TRIMMING REQUIRED FOR CONDUIT OR HANDHOLE INSTALLATION WITHIN THE RIGHT-OF-WAY.

3.08 RIGHT OF WAY LOCATIONS ARE APPROXIMATE. FIBER INSTALLATION 6'-0" MINIMUM OFF RIGHT-OF-WAY.

SECTION 4.0 SAFETY

4.01 CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS TO PROTECT UTILITIES, PEDESTRIANS, WORKERS AND VEHICULAR TRAFFIC. THE CONTRACTOR SHALL PROVIDE TEMPORARY FENCES, BARRICADES, ETC. AS REQUIRED TO PROTECT ADJACENT PROPERTY AND THE PUBLIC DURING ALL PHASES OF CONSTRUCTION.

4.02 THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY BARRICADES, SIGNAGE, WARNING LIGHTS AND OTHER DEVICES AND KEEP ALL TRAFFIC CONTROL OPERATIONAL 24 HOURS A DAY AT ALL OPEN TRENCH LOCATIONS AND AT LOCATIONS WHICH DO NOT HAVE A FINISHED SURFACE OR ROAD PLATES.

4.03 THE CONTRACTOR SHALL COORDINATE INGRESS AND EGRESS TO ADJACENT PROPERTIES AND/OR CONSTRUCTION AFFECTED BY THE PROPOSED WORK.

SECTION 5.0 EXISTING UTILITIES

5.01 EXISTING CONDITIONS, STRUCTURES, UTILITIES AND SURFACE FEATURES SHOWN WERE OBTAINED FROM UTILITY ATLASES AND FROM DRAWINGS FURNISHED BY THE VARIOUS UTILITIES AND ARE ASSUMED TO BE ACCURATE AND CORRECT. THE CONTRACTOR SHALL PERFORM HIS OWN SURVEY AND VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS OF EXISTING STRUCTURES PRIOR TO STARTING ANY WORK.

5.02 FOR BORED INSTALLATIONS, THE CONTRACTOR SHALL PERFORM TEST HOLES AT ALL UTILITY CROSSINGS TO VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO ANY EXCAVATION, AND TO LOCATE ANY POSSIBLE OBSTRUCTIONS. ALL TEST HOLES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

5.03 FOR TRENCHED INSTALLATIONS, THE CONTRACTOR SHALL PERFORM TEST HOLES PER PLAN OR AS DEEMED NECESSARY TO VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO ANY EXCAVATION, AND TO LOCATE ANY POSSIBLE OBSTRUCTIONS. ALL TEST HOLES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

5.04 THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL OVERHEAD OBSTRUCTIONS PRIOR TO THE COMMENCEMENT OF WORK.

5.05 EXISTING UTILITIES ARE SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL CONTACT IOWA ONE CALL AT 1(800)-292-8989 A MINIMUM OF 48 HOURS (EXCLUDING WEEKENDS AND GOVERNMENT HOLIDAYS) PRIOR TO COMMENCEMENT OF ANY PAVEMENT CUTS OR EXCAVATION TO REQUEST LOCATING AND MARKING OF EXISTING UTILITIES PRIOR TO PERFORMING ANY EXCAVATION WORK IN OR AROUND ANY UTILITY.

5.06 ALL EXCAVATION WORK NEAR AND AROUND EXISTING STRUCTURES AND UTILITIES SHALL BE BY HAND METHOD.

5.07 ALL DISCREPANCIES SHOULD BE REPORTED TO ENGINEER OF RECORD AT HBK ENGINEERING (319-338-7557). ANY QUESTIONS OR COMMENTS THE CONTRACTOR MAY HAVE ARE TO BE DISCUSSED WITH THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.

5.08 FURTHER, THE CONTRACTOR SHALL RECORD THE LOCATION AND ELEVATION OF ALL UTILITIES ENCOUNTERED, AND INSTALLATION OF NEW WORK, AS THE WORK PROGRESSES AND SHALL PREPARE RECORD DRAWINGS (RED-LINES) BASED ON HIS RECORDS. AS PART OF THE RECORD DRAWINGS, CONTRACTOR SHALL ALSO PROVIDE HORIZONTAL AND VERTICAL CONFIGURATION OF CONDUITS WHERE MULTIPLE CONDUITS ARE INSTALLED. THESE RECORDS TO BE SUPPLIED TO HBK ENGINEERING, LLC AT COMPLETION OF WORK.

5.09 AT SEWER DRAINS FROM HOMES OR OTHER BUILDINGS, IF THERE IS INTERFERENCE, REPLACE INKIND. IN ALL CASES WHERE SEWER WORK IS DONE, A PERMIT SHOULD BE OBTAINED AND A SEWER INSPECTOR SHOULD BE PRESENT DURING THE WORK.

5.10 CONTRACTOR SHALL SUPPORT ALL WATER MAINS IN EXCESS OF 12" IN DIAMETER WITH A PERMANENT TYPE OF STRUCTURE UNLESS OTHERWISE NOTIFIED BY THE WATER DEPARTMENT, AND IS INCLUDED IN COST FOR DOING THE WORK. AT NO TIME DURING CONSTRUCTION SHALL WATER MAINS GO UNSUPPORTED FOR A SPAN GREATER THAN 8'-0".

5.11 CONTRACTOR RESPONSIBLE FOR OBTAINING AND PROVIDING REVIEW AND DESIGN OF ANY AND ALL TEMPORARY UTILITY SUPPORT SYSTEMS PRIOR TO CONSTRUCTION.

5.12 CONTRACTOR SHALL NOTIFY ALLIANT IN SITUATIONS WHERE STEEL PIPE CONDUCTOR IS NICKED DURING EXCAVATION. ALLIANT WILL EVALUATE THE EXTENT OF THE DAMAGE SO AS TO DETERMINE WHETHER REPAIR IS REQUIRED PRIOR TO BACKFILL AND GRADE SURFACE RESTORATION.

SECTION 6.0 WORK

6.01 NO STORAGE OF EQUIPMENT OR MATERIALS IN THE ROADWAY IS PERMITTED UNLESS THE CONTRACTOR OBTAINS WRITTEN PERMISSION FROM THE CITY, STATE, AND/OR GOVERNING BODY.

6.02 THE CONTRACTOR SHALL MARK ALL OPENINGS ON THE SURFACE PRIOR TO THE COMMENCEMENT OF EXCAVATION. ALL OPENINGS ON PAVED SURFACES SHALL BE SAW CUT PRIOR TO REMOVAL OF PAVEMENT.

6.03 CONTRACTOR RESPONSIBLE FOR OBTAINING AND PROVIDING REVIEW AND DESIGN OF ANY AND ALL SHORING SYSTEMS PRIOR TO CONSTRUCTION.

6.04 CONTRACTOR SHALL ASSUME ALL ELECTRICAL CABLES ARE ENERGIZED AND SHALL BE SUPPORTED SO AS NOT TO STRESS ANY PORTION OF THE CABLE.

6.05 CONTRACTOR SHALL PROVIDE APPROPRIATE ENGINEERED DE-WATERING MEASURES, IF NECESSARY, TO ENSURE GROUNDWATER TABLE REMAINS AT A DEPTH BELOW THE BASE OF THE EXCAVATION AT ALL TIMES DURING EXCAVATION, INSTALLATION AND BACKFILLING OPERATIONS.

6.06 THE ENGINEER SHALL BE NOTIFIED FOR RESOLUTION OF SITUATIONS WHERE CONDUIT DEPTH BELOW GRADE DEVIATES BY MORE THAN 3" AS CURRENTLY SHOWN ON PLAN/PROFILE DRAWINGS.

6.07 THE ENGINEER SHALL ALSO BE NOTIFIED FOR DISPOSITION OF SITUATIONS WHERE THE CONDUIT CANNOT MAINTAIN SEPARATIONS PER PLAN.

SECTION 7.0 RESTORATION

7.01 THE CONTRACTOR SHALL OBTAIN A PERMIT TO PERFORM ALL RESTORATION WORK IN THE CONTRACTOR'S NAME. ALL PAVING SHALL BE COMPLETED WITHIN 15 WORKING DAYS AFTER EXCAVATION IS BACKFILLED UNLESS OTHERWISE ARRANGED IN ADVANCE WITH GOVERNING AGENCY.

7.02 CONTRACTOR SHALL BREAK OUT SIDEWALK, DRIVEWAY, CURB AND GUTTER, PAVEMENT AND RESTORE TO PERMANENT CONDITION. CONTRACTOR TO CONFORM CONCRETE TO COLOR, FINISH, AND TEXTURE OF EXISTING SIDEWALKS, CURB AND GUTTER.

7.03 THE CONTRACTOR IS RESPONSIBLE FOR THE RESTORATION OF THE AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. CONTRACTOR TO PAY ALL FEES AND OBTAIN ALL PERMITS FOR RESTORATION.

7.04 THE CONTRACTOR IS TO RESTORE ALL DAMAGED STRUCTURES AND UTILITIES TO THE SATISFACTION OF THE FACILITY OWNER, IN THE EVENT THAT DAMAGE OCCURS.

LEGEND

FENCE	— x — x — x —
EXISTING ROW LINE	— — — — —
EXISTING FIBER OPTIC LINE	— FO — FO —
EXISTING OVERHEAD LINE	— OH — OH —
EXISTING STORM DRAIN	— SD — SD —
EXISTING ELECTRIC (BURIED)	— E — E —
EXISTING GAS LINE	— G — G —
EXISTING STORM SEWER	— > — > —
EXISTING SANITARY SEWER	—) —) —
EXISTING WATER LINE	— W — W —
EXISTING ICN FIBER	— — — — —
EXISTING ICN (AERIAL)	— A — — — —
EXISTING ICN CONDUIT	— — — — —
TO BE ABANDONED	— — — — —
PROPOSED ICN FIBER	— — — — —
PROPOSED AERIAL	— A — — — —
PROPOSED ICN CONDUIT	— — — — —
CENTERLINE OF ROAD	— — — — —
EXISTING WATERWAY BOUNDARY	— — — — —
PROPOSED ICN HANDHOLE	HH
EXISTING ICN HANDHOLE	HH
PROPOSED HANDHOLE (BY OTHERS)	HH
EXISTING STORM CULVERT LOCATION	⌋
EXISTING STORM MANHOLE	ST
EXISTING STORM INLET	⌋
EXISTING SANITARY MANHOLE	SS
EXISTING SANITARY CLEAN OUT	⊙
EXISTING FIBER OPTIC MANHOLE	FO
EXISTING FIBER OPTIC HANDHOLE	FO
EXISTING COMMUNICATIONS MANHOLE	⊙
EXISTING COMMUNICATIONS HANDHOLE	⊙
EXISTING COMMUNICATIONS PEDESTAL	⊙
EXISTING ELECTRIC MANHOLE	E
EXISTING ELECTRIC TRANSFORMER	E
EXISTING ELECTRIC PEDESTAL	E
EXISTING ELECTRIC HANDHOLE	E
EXISTING UTILITY POLE	⊙
EXISTING GUY ANCHOR	←
EXISTING LIGHT POLE	⊙
EXISTING WATER MANHOLE	W
EXISTING WATER VALVE	⊙
EXISTING MONITORING WELL	⊙
EXISTING FIRE HYDRANT	⊙
EXISTING NATURAL GAS MANHOLE	G
EXISTING NATURAL GAS VALVE	⊙
EXISTING TREE	⊙



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE



1	60% PLAN REVIEW	4/5/2023
2	90% PLAN REVIEW	4/20/2023
3	FINAL PERMIT PLANS	4/21/2023
4		

IOWA COMMUNICATIONS NETWORK
400 EAST 14TH STREET
GRIMES STATE OFFICE BUILDING
DES MOINES, IOWA 50319
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ICN GENERAL NOTES

STANDARD INSTALLATION REQUIREMENTS:

GENERAL REQUIREMENTS:

1. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES.
2. PROVIDE THE OWNERS OF ANY NATURAL GAS UTILITY 48 HOURS ADVANCE NOTICE THAT WORK IS SCHEDULED IN THE VICINITY OF THEIR LINES/MAINS SO THAT THEY CAN PROVIDE STANDBY AND PROTECT SERVICES.
3. MAINTAIN PROOF OF NOTIFICATION TO AND RECEIPT OF NOTIFICATION BY THE GAS UTILITY.
4. PERMITS AND COORDINATION
 - 4.1. SECURE ALL NECESSARY STATE AND LOCAL (CITY, COUNTY, ETC.) PERMITS, PUBLIC OR PRIVATE EASEMENTS, FACILITY PERMITS, USAGE PERMITS, AND ANY OTHER PERMIT REQUIRED BY AN AUTHORITY HAVING JURISDICTION (AHJ). ALL CONTRACTORS AND SUBCONTRACTORS MUST BE LICENSED AND BONDED WITH THE CITY OF CLEAR LAKE.
 - 4.2. ICN WILL OBTAIN AND PROVIDE COPIES OF IDOT PERMITS.
 - 4.3. IF PERMITS ARE REQUIRED TO BE IN THE NAME OF THE OWNER RATHER THAN THE CONTRACTOR, THE CONTRACTOR SHALL PREPARE THE PERMIT FOR THE OWNER'S SIGNATURE.
 - 4.4. COORDINATE INSTALLATION WITH ALL OWNERS AND AHJ OVER THE ROUTE, THE FIBER, RIGHT-OF-WAY AND BUILDINGS IN WHICH END POINTS WILL BE LOCATED.
 - 4.5. FAILURE TO COORDINATE WITH THE AHJ AND TO OBTAIN ALL NECESSARY PERMITS IS AT THE PERIL OF THE CONTRACTOR.
 - 4.6. RIGHT-OF-WAY PERMIT FEES ARE AN AUTHORIZED EXTRA ABOVE THE QUOTED BID PRICE. EXCAVATION PERMITS SHALL BE BY THE CONTRACTOR.
 - 4.7. ENSURE ALL FACILITIES ARE PLACED WITHIN THE PUBLIC RIGHT-OF-WAY.
5. ENSURE THAT PERSONNEL WORKING IN THE ROW ARE EQUIPPED WITH AND USE PROPER SAFETY EQUIPMENT AND ATTIRE.
6. ALL TOOLS AND TEST EQUIPMENT REQUIRED TO DO A PROJECT SHALL BE PROVIDED BY THE CONTRACTOR OR ITS SUBCONTRACTOR(S). SECURITY OF TOOLS AND TEST EQUIPMENT SHALL BE THE RESPONSIBILITY OF EACH WORKER. THE ICN SHALL NOT BE RESPONSIBLE FOR THE SECURITY OF ANY PROPERTY LEFT ON ICN'S PROPERTY OR ON PROPERTY CONTROLLED BY THE ICN OR THE STATE OF IOWA.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTRUCTING ITS EMPLOYEES IN SAFETY MEASURES CONSIDERED APPROPRIATE FOR THE JOB. IN ADDITION, THE CONTRACTOR SHALL NOT PERMIT PLACING OR USE OF TOOLS OR MATERIALS IN TRAFFIC LANES OR OTHER LOCATIONS. THE TOOLS OR MATERIALS SHALL NOT BE PLACED IN SUCH A MANNER SO AS TO CREATE SAFETY HAZARDS TO STATE EMPLOYEES, CONTRACTING AGENCY EMPLOYEES, THE PUBLIC OR THEMSELVES.
8. EXCAVATIONS AND TRENCHES: THE ICN REQUIRES ALL OPEN EXCAVATIONS OR TRENCHES TO BE MONITORED AND ATTENDED TO DURING CONSTRUCTION PER. THE ICN REQUIRES ALL OPEN EXCAVATIONS AND TRENCHES BACKFILLED THE SAME DAY. IF THE CONTRACTOR IS REQUIRED TO LEAVE AN EXCAVATION OR TRENCH OPEN, THEN THE CONTRACTOR SHALL PROPERLY FENCE AND/OR COVER THE EXCAVATION FOR SAFETY. CONTRACTOR SHALL FOLLOW ALL OSHA REQUIREMENTS FOR EXCAVATION AND TRENCH SAFETY.
9. CONTRACTOR AND ITS EMPLOYEES SHALL COMPLY WITH ALL OSHA REGULATIONS. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL LAWS.
10. CONTRACTOR SHALL COMPLY WITH ALL IOWA ONE CALL REQUIREMENTS AS PROVIDED BY IOWA CODE, CHAPTER 480.
11. PROVIDE ALL LABOR AND SUPERVISION FOR THE PROJECT.
12. PROVIDE AND INSTALL MATERIALS NEEDED TO RESULT IN A FULLY FUNCTIONAL SYSTEM MEETING ICN STANDARDS, WHETHER OR NOT THE MATERIALS OR METHODS ARE SPECIFICALLY MENTIONED IN THIS DOCUMENT. SEE THE LIST OF ICN-FURNISHED MATERIALS.
13. INSTALL CABLE ROUTE MARKERS FURNISHED BY ICN. WHERE POSSIBLE, INSTALL MARKERS ADJACENT TO POLES, BUILDINGS OR IN OTHER PROTECTED AREAS.
14. A COPY OF THIS SCOPE OF WORK AND THE ENGINEERING PLAN FOR THIS PROJECT SHALL BE ON SITE AND AVAILABLE ANY TIME WORK IS BEING PERFORMED. FAILURE TO HAVE THE REQUIRED DOCUMENTS ON SITE MAY RESULT IN ICN REQUIRING THE CONTRACTOR TO STOP WORKING UNTIL THE REQUIRED DOCUMENTS ARE ON-SITE.
15. SUBCONTRACTORS SHALL MEET THE SAME QUALIFICATIONS STATED FOR CONTRACTORS. CONTRACTOR SHALL OBTAIN APPROVAL OF THE CONTRACTING AGENCY'S PROJECT MANAGER PRIOR TO USING A SUBCONTRACTOR ON ANY PROJECT.
16. RESTORE ALL DAMAGE TO PRIVATE PROPERTY, RIGHT-OF-WAY, ICN PROPERTY, AND ANY OTHER PROPERTY DAMAGED IN THE COURSE OF THE WORK.
 - 16.1. ANY DISRUPTION OF GRASS IN AN INDIVIDUAL'S YARD OR IN A PRIVATE MAINTAINED AREA OF THE PUBLIC RIGHT OF WAY (THE AREA BETWEEN THE SIDEWALK AND THE STREET CURB) MUST BE RESTORED THROUGH RE-SODDING. ANY DISRUPTION OF THE GRASS IN THE MEDIAN WAY OR AN UNIMPROVED SHOULDER MUST BE RESTORED EITHER THROUGH RE-SODDING OR RE-SEEDING AS REQUIRED BY THE ROW OWNER.
 - 16.2. AREAS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
 - 16.3. DIRT SHALL BE MECHANICALLY COMPACTED AROUND HANDHOLES AND PITS.
 - 16.4. LAWNS SHALL BE SODDED WITH LIKE GRASS.
 - 16.5. CONTRACTOR IS RESPONSIBLE FOR WATERING THE SOD UNTIL IT HAS KNITTED TO THE GROUND BENEATH.
 - 16.6. ALL DEBRIS SHALL BE REMOVED FROM THE CONSTRUCTION AREAS INCLUDING BUT NOT LIMITED TO: CONSTRUCTION MATERIALS, TRASH, LARGE OBJECTS OR STONES WITHIN BACKFILLED AREAS, ETC.

DUCT INSTALLATION REQUIREMENTS

1. HDPE DUCT SHALL BE NO LESS THAN 36-42 INCHES DEEP.
2. DUCT SHALL BE INSTALLED IN THE PUBLIC RIGHT-OF-WAY.
3. WHEN CROSSING A HIGHWAY IN DOT RIGHT-OF-WAY, DUCT SHALL BE NO LESS THAN 48 INCHES BELOW GRADE UNDER THE ROADWAY AND SHOULDERS. HDPE MAY BE USED UNDER THE ROADWAY AND SHOULDERS IF INSTALLED AT A MINIMUM DEPTH OF 48".
4. SHOULD IT BE NECESSARY TO CROSS PRIVATE PROPERTY, THE CONTRACTOR MAY APPLY TO THE ICN FOR AN EXCEPTION, AND REQUEST PERMISSION TO SECURE AN EASEMENT. THE EASEMENT IS REQUIRED TO BE IN THE NAME OF ICN AND THE CONTRACTOR SHALL HAVE THE EASEMENT PREPARED BY A LAND SURVEYOR LICENSED IN THE STATE OF IOWA. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES UNLESS PREVIOUSLY AUTHORIZED BY THE ICN.
5. AT THE CONCLUSION OF THE PROJECT, PROVIDE AND LEAVE A PULL ROPE IN ALL DUCTS, CONDUITS AND PATHWAYS, INCLUDING INDOOR, OUTDOOR, NEW AND EXISTING.
6. DIRT SHALL BE MECHANICALLY COMPACTED AT ALL DUCT SPLICES, BORE PITS AND AROUND HANDHOLES.
7. GROUND SHALL BE RESTORED TO THE CONDITION FOUND PRIOR TO CONSTRUCTION AND DEBRIS REMOVED PRIOR TO SODDING OR SEEDING.
8. ALL CONDUITS SHALL BE PLUGGED VIA DUCT SEAL OR OTHER METHOD UPON COMPLETION OF CABLE INSTALLATION.
9. IF SCHEDULE 40 PVC CONDUIT IS UTILIZED, ALL ANGLES (45, 90 DEGREE OR OTHER) REQUIRE FITTINGS TO LONG SWEEP TO ACCOMMODATE MINIMUM CABLE BEND RADIUSES.
10. THE ICN REQUIRES PICTURES BY THE CONTRACTOR AND/OR ON-SITE INSPECTION BY ICN STAFF PRIOR TO COMPLETION OF THE PROJECT WHERE PIPE AND FITTINGS ARE NOT EXPOSED; I.E. UNDERGROUND, BEHIND A WALL, ETC.

HANDHOLE REQUIREMENTS

1. INSTALL HANDHOLES SO THAT THE LID IS LEVEL AND FLUSH WITH THE SURROUNDING NATURAL GRADE. THE LID SHALL NOT EXTEND ABOVE THE SURROUNDING NATURAL GRADE.
2. PROVIDE 3/4" OPENING HARDWARE CLOTH TYPE SCREEN WIRE BELOW THE HANDHOLE.
3. PROVIDE 5-6 INCHES OF 3/4" CRUSHED ROCK BELOW THE HANDHOLE. ROCK SHALL BE COMPACTED. GRAVEL SHALL EXTEND A MINIMUM OF 6 INCHES BEYOND THE OUTSIDE WALLS OF THE HANDHOLE. DO NOT USE PEA GRAVEL OR OTHER ROUND STONE.
4. DO NOT PLACE GRAVEL INSIDE HANDHOLE ABOVE THE HARDWARE CLOTH.
5. CONDUIT SHALL EXTEND A MINIMUM OF 6" ABOVE THE HARDWARE CLOTH/GRAVEL.
6. FAILURE OF THE CONTRACTOR TO INSTALL HANDHOLES AS SPECIFIED WILL CAUSE THE CONTRACTOR TO RETURN AND RE-INSTALL THE HANDHOLE ACCORDING TO THIS SPECIFICATION BEFORE PAYMENT FOR THE PROJECT IS MADE.
7. HANDHOLE INSTALLATIONS SHALL FOLLOW ICN STANDARD TYPICAL INSTALLATION; SEE TYPICAL DRAWING.

FIBER INSTALLATION REQUIREMENTS

1. INSTALL FIBER ACCORDING TO INDUSTRY "BEST PRACTICES".
2. THE CONTRACTOR SHALL NOT VIOLATE THE MANUFACTURER'S MINIMUM INSTALLATION BEND RADIUS WHEN THE CABLE IS UNDER TENSION, OR THE MINIMUM INSTALLED BEND RADIUS.
3. TO PREVENT EXCEEDING THE MANUFACTURER'S MAXIMUM PULLING TENSION DURING INSTALLATION OF THE FIBER OPTIC CABLE, THE CONTRACTOR SHALL USE A "BREAK-AWAY" PULLING SWIVEL WHEN INSTALLING CABLE.
4. THE "BREAK-AWAY" FUNCTION SHALL ACTIVATE AT OR BELOW THE MAXIMUM PULLING TENSION SPECIFIED BY THE CABLE MANUFACTURER.
5. THE CONTRACTOR SHALL TEST ALL STRANDS OF THE FIBER, ON THE REEL, PRIOR TO BEGINNING FIBER INSTALLATION. CONFIRM THAT ALL STRANDS MEET MANUFACTURER'S LOSS SPECIFICATIONS.
6. THE CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND EXISTING CONDITIONS PRIOR TO STARTING CONSTRUCTION.
7. SLACK LOOPS IN HANDHOLES SHALL BE COILED, INSTALLED, AND SECURED TO AVOID DAMAGE TO THE COIL AND NOT INTERFERE WITH LIDS.
8. SLACK LOOPS AT SPLICES SHALL BE COILED TO MATCH THE EXISTING FIBER CABLE TAILS AND ALLOWANCE FOR SPLICE PREPARATION.
9. ICN FIBER IN ALL HANDHOLES SHALL BE LABELED WITH ICN WRAP AROUND CABLE TAGS OR OTHER LABELED CABLE TAGS.

BUILDING ENTRY REQUIREMENTS

1. WEATHER-SEAL ALL PENETRATIONS.
2. USE MORTAR OR SIMILAR CEMENT TO SEAL PENETRATION OF BRICK OR CEMENT BLOCK.
3. FIRESTOP PENETRATIONS OF ANY FIRE-RATED FLOOR, WALL OR CEILING.
4. REPLACE THE FIRESTOP MATERIAL IN ANY EXISTING FIRESTOPPED PENETRATION USED BY THE CONTRACTOR.
5. ALL OUTDOOR CONDUITS, OF ANY LENGTH, SHALL BE GALVANIZED IRON PIPE (GIP). EMT, PVC AND PLASTIC ARE PROHIBITED.
6. IMMEDIATELY UPON INSTALLATION, SEAL THE ENDS OF ALL DUCTS WITH DUCT SEAL OR EXPANSION FOAM TO PREVENT SILTATION OR FILLING WITH MOISTURE. THIS APPLIES TO BOTH NEW AND EXISTING DUCTS.
7. AT THE CONCLUSION OF THE PROJECT, ENSURE THAT A PULL ROPE IS LEFT IN ALL PATHWAYS, BOTH INSIDE AND OUTSIDE, NEW AND EXISTING.

LOCATE FACILITY REQUIREMENTS

1. TRACER WIRE SHALL BE CONTINUOUS.
2. SPLICES IN THE TRACER WIRE ARE NOT ALLOWED. IF TRACER WIRE IS ACCIDENTALLY SEVERED, REQUEST PERMISSION FROM ICN TO SPLICE.
3. SPLICE ONLY IN HANDHOLES.
4. USE EITHER AN EPOXY SPLICE KIT, SCOTCH 3M 3832 OR A MOLEX PERMASEAL BUTT SPLICE. 10-12 GA. SPLICE MATERIALS SHALL BE DESIGNED FOR UNDERGROUND APPLICATIONS.
5. LEAVE THE WIRE SPLICE VISIBLE IN THE HANDHOLE.
6. ROUTE A GROUND WIRE FROM THE GROUND INSIDE THE BUILDING, THROUGH THE ENTRY TO THE TII 163 TERMINAL.
7. SECURE ALL RISER CONDUITS WITH 3 EACH TWO-HOLE CONDUIT STRAPS.
8. WIRE THE PEDESTAL/TERMINAL SO THAT LOCATES MAY BE PERFORMED IN ANY DIRECTION AND FROM THE FAR END.
9. DO NOT LEAVE ANY EXPOSED TRACER WIRE OR GROUND WIRE.
10. PERMANENTLY GROUND THE TRACER WIRE AT THE HANDHOLE ON THE FURNISHED GROUND ROD.
11. AT THE CONCLUSION OF THE PROJECT LEAVE THE TRACER WIRE SHIELD SHORTED TO GROUND IN THE LOCATE TERMINAL.
12. USE TRACER WIRE THAT IS RATED FOR DIRECT BURIAL WHERE REQUIRED. TRACER WIRE SHALL BE #12 AWG, SOLID HF CCS 30 MIL HDPE HIGH FLEX TRACER WIRE: EITHER SOLID COPPER OR COPPER CLAD STEEL.
13. LABEL ALL WIRES IN THE LOCATE TERMINAL/PEDESTAL/TRIVIEW. (I.E. "GROUND", "FACING DMACC", "FACING NORTH" ETC.)
14. FAILURE TO LABEL THE LOCATE WIRES WILL CAUSE THE CONTRACTOR TO RETURN AND PROPERLY LABEL THE WIRES BEFORE PAYMENT FOR THE PROJECT IS MADE.
15. BOND TRACER WIRE(S) WITHIN SPLICE ENCLOSURES UTILIZING A 3M 4460-D\FO SHIELD BONDING KIT.
16. ROUTE TRACER WIRE(S) OUT OF SPLICE ENCLOSURE THROUGH A SINGLE PORT UTILIZING A FOSC CLOSURE SEALING KIT.
17. AT SPLICE LOCATIONS WITH NO LOCATE PEDESTAL, TRACER WIRES SHALL BE BONDED TOGETHER, WITHIN THE SPLICE ENCLOSURE.
18. AT EACH END OF ANY TRACER WIRE, USE APPROPRIATE-SIZED RING TERMINAL (CRIMP) CONNECTORS USING APPROPRIATE CRIMP TOOL; OR CREATE A WIRE EYELET AS PER TYPICAL INSTALLATION OF TRI-VIEW LOCATE PEDESTAL DETAIL.

DELIVERABLES/ACCEPTANCE:

1. CONTRACTOR SHALL PROVIDE CONSTRUCTION REDLINE AS-BUILTS WITH:
 - 1.1. OFFSETS TO FIXED OBJECTS TO THE CABLE/CONDUIT RUNNING LINE, HANDHOLES AND NEW FACILITIES.
 - 1.2. METER MARKS OF CABLE INSTALLATIONS AT HANDHOLE ENTRY/EXIT, SPLICE LOCATIONS, BUILDING ENTRIES, ETC.
 - 1.3. DEPTHS OF CABLE AND/OR CONDUIT INSTALLATION.
 - 1.4. ONE ORIGINAL SET OF AS-BUILT DRAWINGS MUST BE PROVIDED WITHIN TWO (2) WEEKS AFTER COMPLETION OF CONSTRUCTION FOR THE ICN MANAGEMENT RECORDS. REDLINE AS-BUILT DRAWINGS MUST BE COMPLETE.
2. CONTRACTOR SHALL PROVIDE SPLICING REDLINE OF ALL SPLICING COMPLETED AND VALIDATION THAT THE SPLICE PLAN WAS FOLLOWED.
3. CONTRACTOR IS RESPONSIBLE TO LOCATE FIBER UNTIL ACCEPTANCE BY THE ICN. ACCEPTANCE INCLUDES:
 - 3.1. SUBMISSION OF CONSTRUCTION AND SPLICING RED LINE DRAWINGS BY CONTRACTOR.
 - 3.2. ASSIGNMENT OF LINK NUMBER BY THE ICN (IF APPLICABLE).
 - 3.3. SUBMISSION OF FINAL AS BUILT DRAWING BY THE ICN TO THE ICN NETWORK MAINTENANCE PROVIDER.
 - 3.4. SUBMISSION TO IOWA ONE CALL AND THE ICN NETWORK MAINTENANCE PROVIDER'S CONTRACT LOCATER.
 - 3.5. THE MEASUREMENTS IN THE STATEMENT OF WORK ARE ESTIMATES AND NEED TO BE VERIFIED BY THE CONTRACTOR.
4. ONLY WRITTEN MODIFICATIONS TO THIS SCOPE OF WORK ARE BINDING - VERBAL CHANGES TO THIS SCOPE OF WORK BY ANY PERSON OR PERSONS ARE NOT BINDING, UNLESS CONFIRMED IN WRITING.
5. FINAL PAYMENT WILL NOT BE PROCESSED UNTIL ALL DELIVERABLES ARE RECEIVED AND ACCEPTED.



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE



1	60% PLAN REVIEW	4/5/2023
2	90% PLAN REVIEW	4/20/2023
3	FINAL PERMIT PLANS	4/21/2023
4		

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 400 EAST 14TH STREET
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MATERIALS

ICN PROVIDED MATERIALS			
CATEGORY	ITEM DESCRIPTION	UNIT	QTY
FIBER CABLES	12F ARMORED SM CABLE	LFT	6600
FIBER CABLE	12F SM MIC INTERLOCING ARMORED PLENUM CABLE	LFT	350
FDP, BULHEADS, TRAYS	CORNING CCH-01U RAC MOUNT FDP	EA	2
FDP, BULHEADS, TRAYS	CORNING CCH 12F SM D-SC CASSETTE LOADED	EA	2
SPLICE CLOSURE	*450A SPLICE CLOSURE (W/LUGS)	EA	1
SPLICE TRAY	*A TRAY 12-POS	EA	1
SHIELD BOND CONNECTOR	*SHIELD BOND CONNECTOR	EA	2

VENDOR PROVIDED MATERIALS			
CATEGORY	ITEM DESCRIPTION	UNIT	QTY
HANDHOLES	24X36X36 TIER 15 HH W/LID	EA	4
DUCT	2" ORANGE HDPE DUCT	LFT	5130
FIBER OPTIC CABLE TAGS	LABELED "BOONE CSD"	EA	10
LOCATE FACILITIES	6 AWG BARE SOLID COPPER GROUND WIRE	LFT	20

ESTIMATE OF QUANTITIES				
ITEM NO.	ITEM	UNIT	PLANNED TOTAL	AS-BUILT TOTAL
1	MOBILIZATION	LS	1	
2	INSTALL 24" X 36" X 36" HANDHOLE	EA	4	
3	2" CONDUIT	LF	5272	
4	12F SM OFNR	LF	250	
5	12F SM ARMORED FIBER (TOTAL)	LF	6425	
6	12F SM ARMORED FIBER (RUNNING LINE)	LF	5925	
7	12F SM ARMORED FIBER (COIL)	LF	500	
8	450A SPLICE ENCLOSURE	EA	1	

NOTE: CONDUIT INSTALLATION METHOD SHALL BE BORED UNDER ANY ROADWAYS, DRIVEWAYS, AND PAVED SURFACES. THE METHOD BETWEEN PLOW VERSUS BORE FOR CONDUIT INSTALLATION IS AT THE CONTRACTORS DISCRETION.

NOTE ON HDPE CONDUIT AND SPLICES:

- HDPE SHALL BE ORANGE SMOOTH WALL SDR 13.5
- DUCT SPLICES SHALL BE MADE OF THE FOLLOWING (IN ORDER OF PREFERENCE.)
 - CRIMP ON
 - CLAMP ON / BOLT ON (SPLIT COUPLINGS)
 - PUSH ON
- ALL SPLICES SHALL BE AIR AND WATER TIGHT**
- DUCT SPLICES SHALL BE OF A TYPE MADE SPECIFICALLY FOR JOINING HDPE CONDUIT
- ALL DUCT SPLICES SHALL BE MADE IN SUCH MANNER AS TO ALLOW CONTINUOUS PULLING OF CABLE THROUGH DUCT.

****ANY EXCEPTIONS MUST BE AGREED UPON IN WRITING PRIOR TO CONSTRUCTION****

LISTING OF CONDUIT & FIBER WORK						
CONDUIT RUN	FROM	TO	LENGTH	2" CONDUIT	12F SM OFNR	12F SM ARMORED FIBER, UNDERGROUND
1	DATA ROOM EM100	EM156B	250	0	250	0
2	EM156B	HH1	150	0	0	150
3	HH 1	HH 2	1290	1290	0	1290
4	HH2	HH3	1251	1251	0	1251
5	HH3	HH4	2071	2071	0	2071
6	HH4	HH5 - EX	660	660	0	660
7	HH5 - EX	BCSD DATA ROOM	503	0	0	503
TOTAL				5272	250	5925

NOTE: THIS TABLE SHOWS APPROXIMATE LENGTHS IN CONDUIT ONLY AND DOES NOT INCLUDE ANY COILS OR SLACK FOR FINER CABLES, TRACER WIRE, PULL ROPE, ETC. CONTRACTOR SHALL VERIFY NECESSARY QUANTITIES INCLUDING COILS.

LISTING OF HANDHOLE WORK				
HANDHOLE LABEL	HANDHOLE TYPE	ROUTE	STATION	12F/A SM ARMORED FIBER COIL
HH1	24" X 36" X 36"	BOONE MIDDLE SCHOOL	0+00	100
HH2	24" X 36" X 36"	PRAIRIE AVE	12+90	100
HH3	24" X 36" X 36"	JACKSON ST	25+41	150
HH4	24" X 36" X 36"	HANCOCK DR	46+12	100
EX - HH5	EXISTING	LEDGES ELEMENTARY	52+72	100
BCSD DATA ROOM	BUILDING	LEDGES ELEMENTARY	57+75	50
TOTAL				500



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE



1	60% PLAN REVIEW	4/5/2023
2	90% PLAN REVIEW	4/20/2023
3	FINAL PERMIT PLANS	4/21/2023
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BOONE CSD MIDDLE SCHOOL
1640 1ST ST.

LEDGES ELEMENTARY SCHOOL
1805 HANCOCK DR.

SHEET 7

SHEET 8

SHEET 9

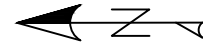
SHEET 10

SHEET 11

SHEET 12

SHEET 13

SHEET 14



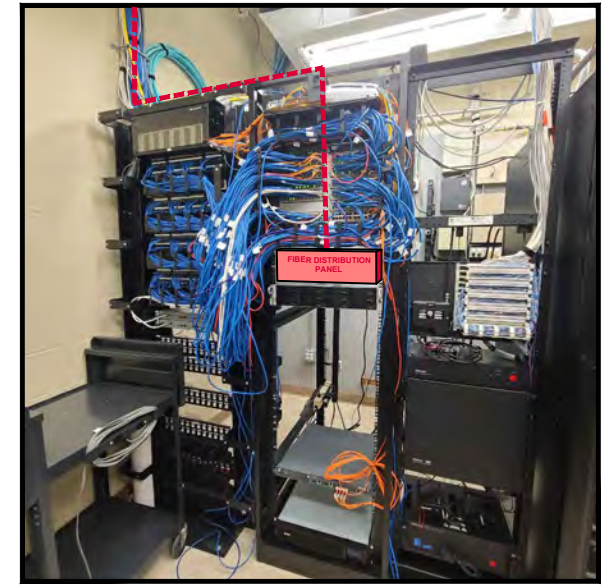
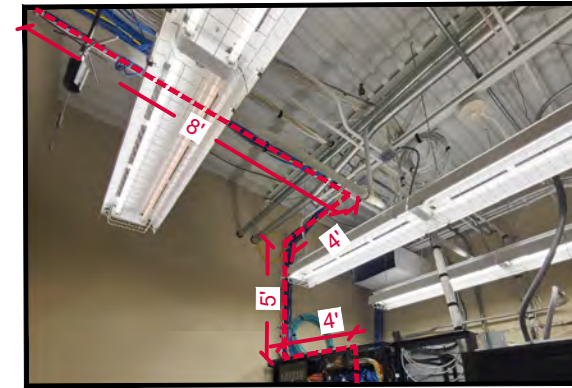
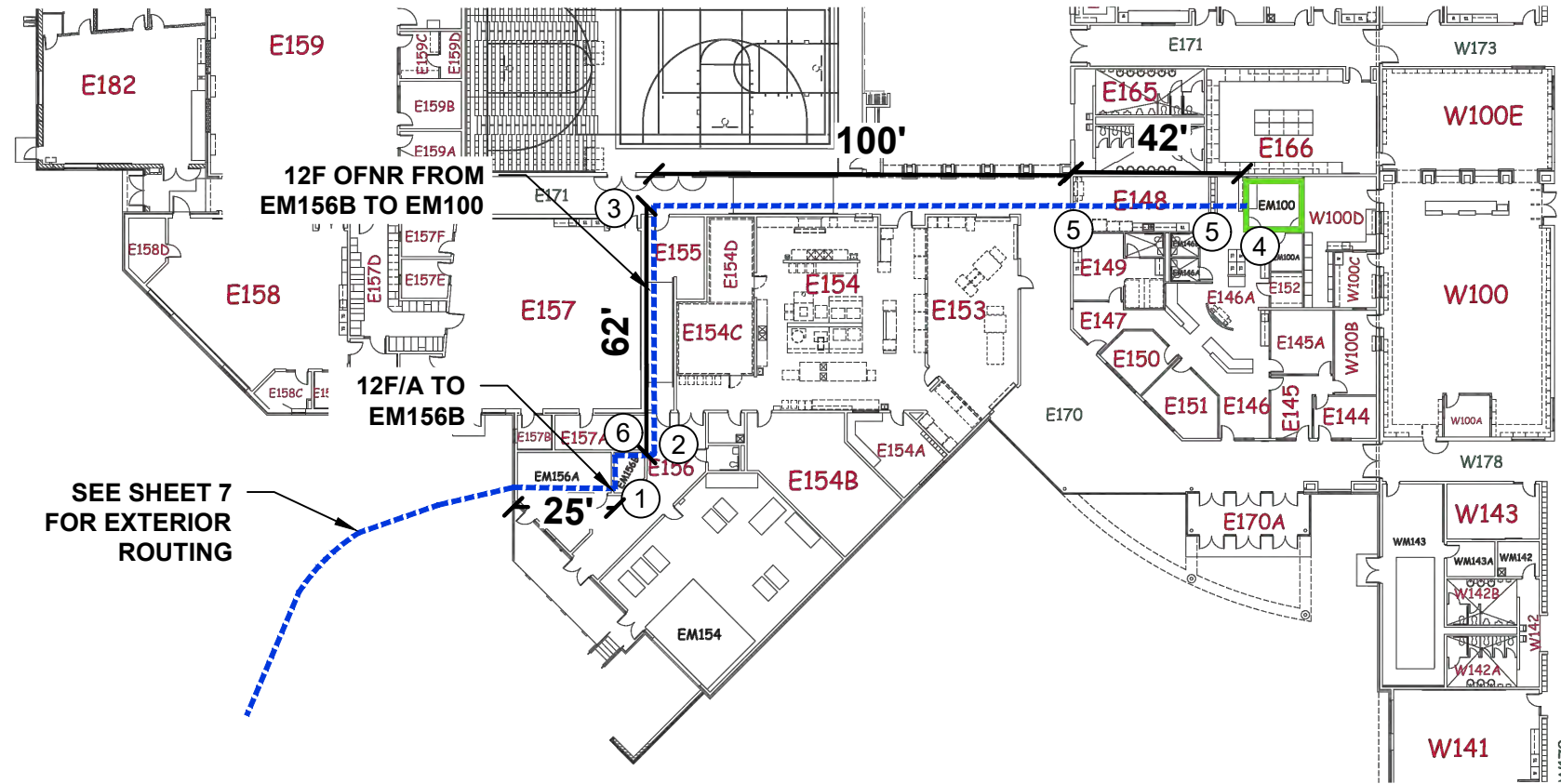
BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY
SCHOOL EXISTING ENTRANCE



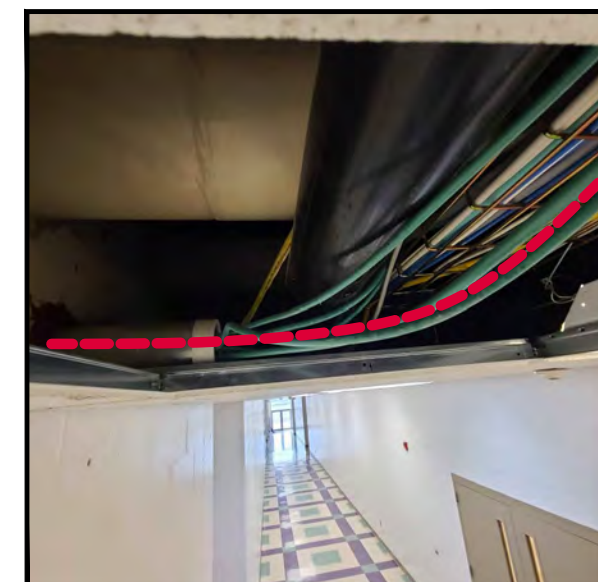
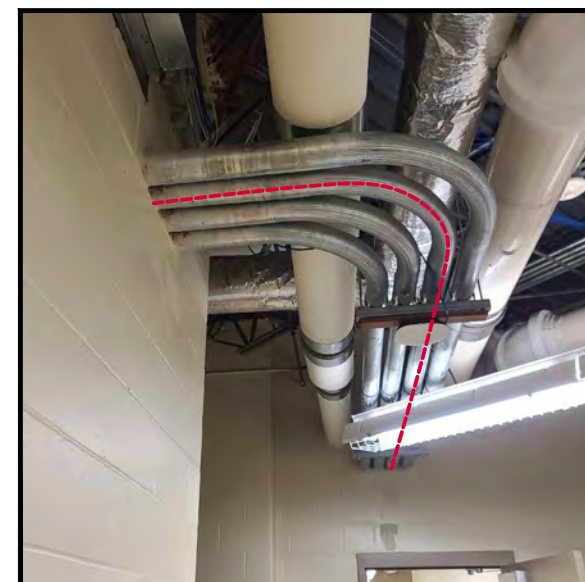
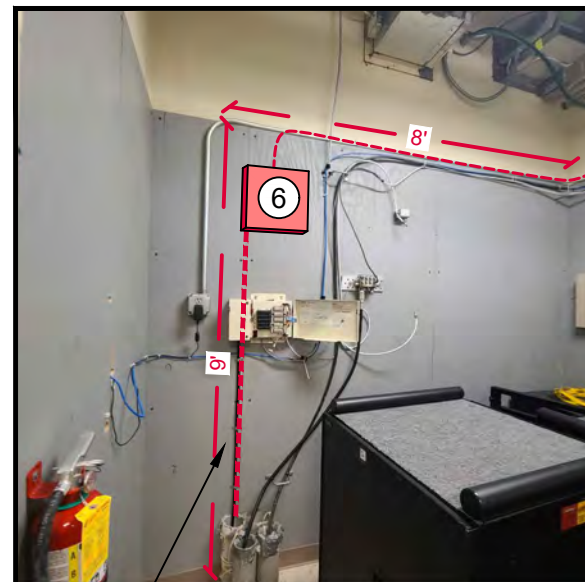
1	60% PLAN REVIEW	4/5/2023
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INTERIOR ROUTE AT BOONE MIDDLE SCHOOL



- ④ DATA ROOM EM100: TRANSITION CABLE FROM EXISTING STEEL CONDUIT TO DATA RACK CABINET. ROUTE WITH EXISTING CABLE TO CABLE TRAY AND RACK LOCATION. LEAVE 25' COIL FOR SPLICER. SECOND RACK FROM THE SOUTH
- ⑤ TRANSITION FROM CABLE TRAY TO STEEL CONDUIT THROUGH WALL



#6 GROUND WIRE -
BOND TO
ARMORED JACKET
AND GROUND BAR

- ① CABLE ROOM EM156B: PULL OSP CABLE THROUGH EXISTING 4" PVC CONDUIT. THEN TRANSITION TO ISP CABLE AND TO EXISTING STEEL CONDUIT
- ⑥ SPLICE POINT. LEAVE 50' TAIL FOR OSP CABLE EXITING BUILDING. LEAVE 50' TAIL FOR ISP CABLE TO DATA ROOM INTERIOR SPLICE FOR TRANSITION BY SPLICING CONTRACTOR.

- ② STEEL CONDUIT TRANSITION IN E156 OUTSIDE OF CABLE ROOM EM156B

- ③ TRANSITION CABLE FROM STEEL CONDUIT TO CABLE TRAY RUNNING WEST ALONG MAIN HALLWAY E171

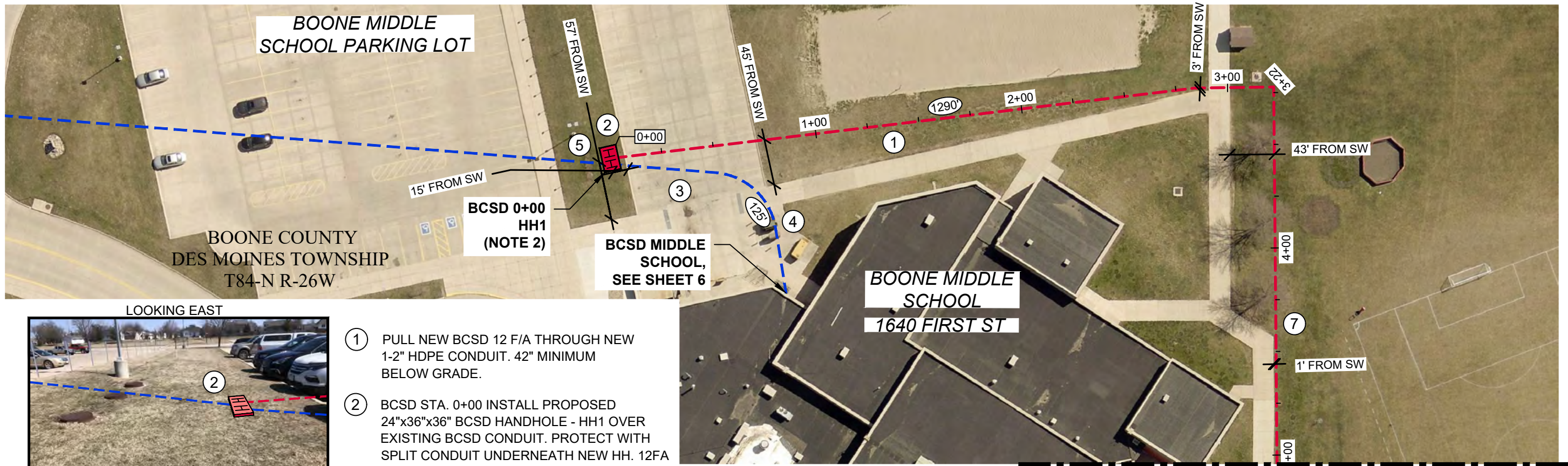


BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE

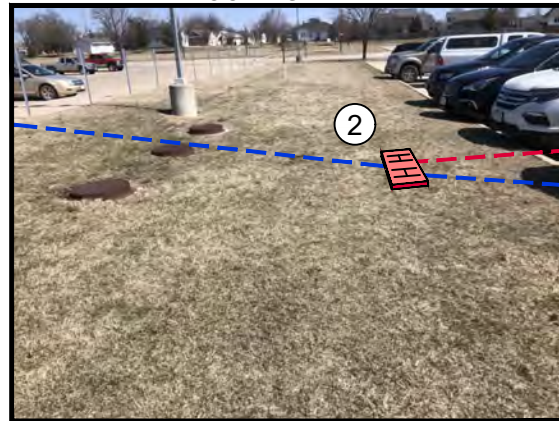


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2	90% PLAN REVIEW	4/20/2023
3	FINAL PERMIT PLANS	4/21/2023
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LOOKING EAST

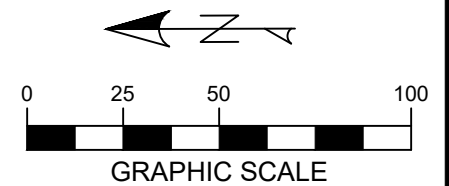


HH1 - BCSD STA. 0+00

- ① PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ② BCSD STA. 0+00 INSTALL PROPOSED 24"x36"x36" BCSD HANDHOLE - HH1 OVER EXISTING BCSD CONDUIT. PROTECT WITH SPLIT CONDUIT UNDERNEATH NEW HH. 12FA - 100' SLACK LOOP
- ③ CONTRACTOR SHALL LOCATE EXISTING FIBER OPTIC CONDUIT FROM MIDDLE SCHOOL TO LOCATION OF PROPOSED BCSD HANDHOLE ~125'.

MATCH LINE SEE SHEET 8

- ④ PULL NEW LINK BCSD 12 F/A THROUGH EXISTING 4" HDPE CONDUIT LEADING TO BOONE MIDDLE SCHOOL CABLE ROOM EM156B (SEE SHEET 6)
- ⑤ CONTRACTOR TO EXPOSE EXISTING (4) 4" CONDUIT AND NOTIFY BCSD OF CONDUIT DEPTH ...
- ⑥ OTHER UTILITY PROVIDERS IN AREA. STAY 36" CLEAR FROM ALL EXISTING UTILITIES.
- ⑦ WATER MAIN RUNS PARALLEL WITH SIDEWALK SOUTH OF SCHOOL FROM STA. 3+00 TO STA.5+50. USE CAUTION WHEN BORING THIS AREA



LOOKING SOUTH



BETWEEN PROPOSED HH1 AND SCHOOL

LOOKING WEST



BCSD STA. 0+75

LOOKING SOUTH



BCSD STA. 2+50

LOOKING WEST



BCSD STA. 4+30

LISTING OF HANDHOLES				
HANDHOLE	STATION	HANDHOLE	STATION	LENGTH FT
HH1	0+00	HH2	12+90	1290
TOTAL				1290

* LENGTH DOES NOT INCLUDE SLACKCOILS

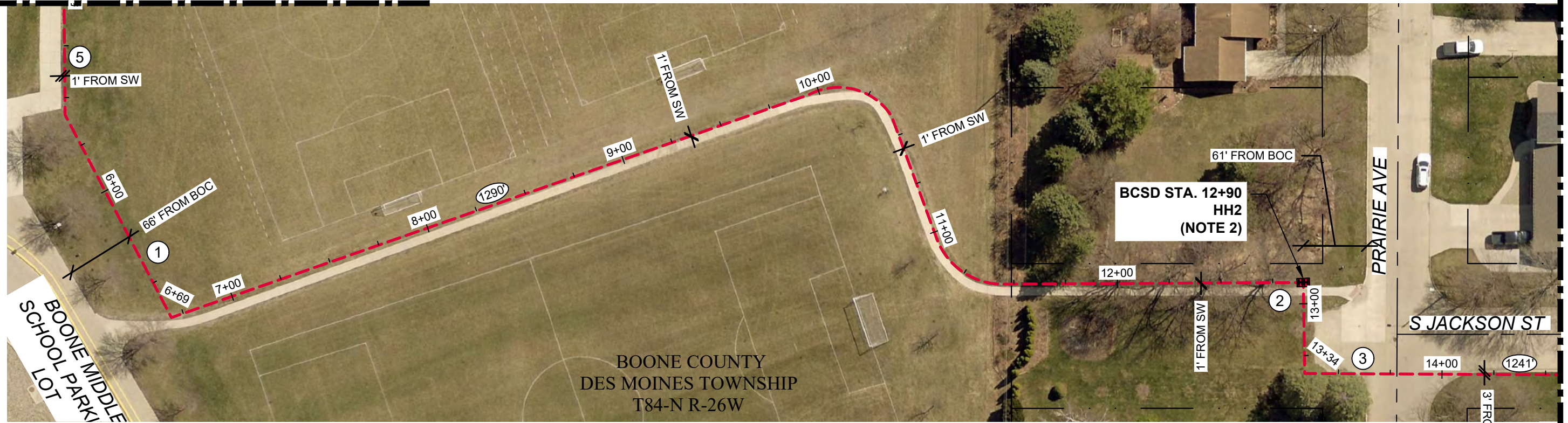
NOTE: RUNNING LINE TO BE ADJUSTED PER UTILITY LOCATES. CONTACT THE ICN AND BOONE COUNTY PUBLIC WORKS TO ADJUST RUNNING LINE



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE **hbk** **icn**

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3	FINAL PERMIT PLANS	4/21/2023	
4			

MATCH LINE SEE SHEET 7



MATCH LINE SEE SHEET 9

LOOKING WEST



BCSD STA. 5+30

LOOKING SOUTH



ROUTE FOLLOWING EAST SIDE OF SIDEWALK TO HH2

LOOKING NORTH



HH2 - BCSD STA. 12+90

LOOKING WEST



BCSD STA. 12+90

- ① PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ② BCSD STA. 12+90 INSTALL PROPOSED 24"x36"x36" BCSD HANDHOLE - HH2 LINK BCSD-12 F/A 100' SLACK COIL
- ③ PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ④ OTHER UTILITY PROVIDERS IN AREA. STAY 36" CLEAR FROM ALL EXISTING UTILITIES.
- ⑤ WATER MAIN RUNS PARALLEL WITH SIDEWALK SOUTH OF SCHOOL FROM STA. 3+00 TO STA.5+50. USE CAUTION WHEN BORING THIS AREA

LISTING OF HANDHOLES

HANDHOLE	STATION	HANDHOLE	STATION	LENGTH FT
HH1	0+00	HH2	12+90	1290
HH2	12+90	HH3	25+41	1251
TOTAL				2541

* LENGTH DOES NOT INCLUDE SLACKCOILS

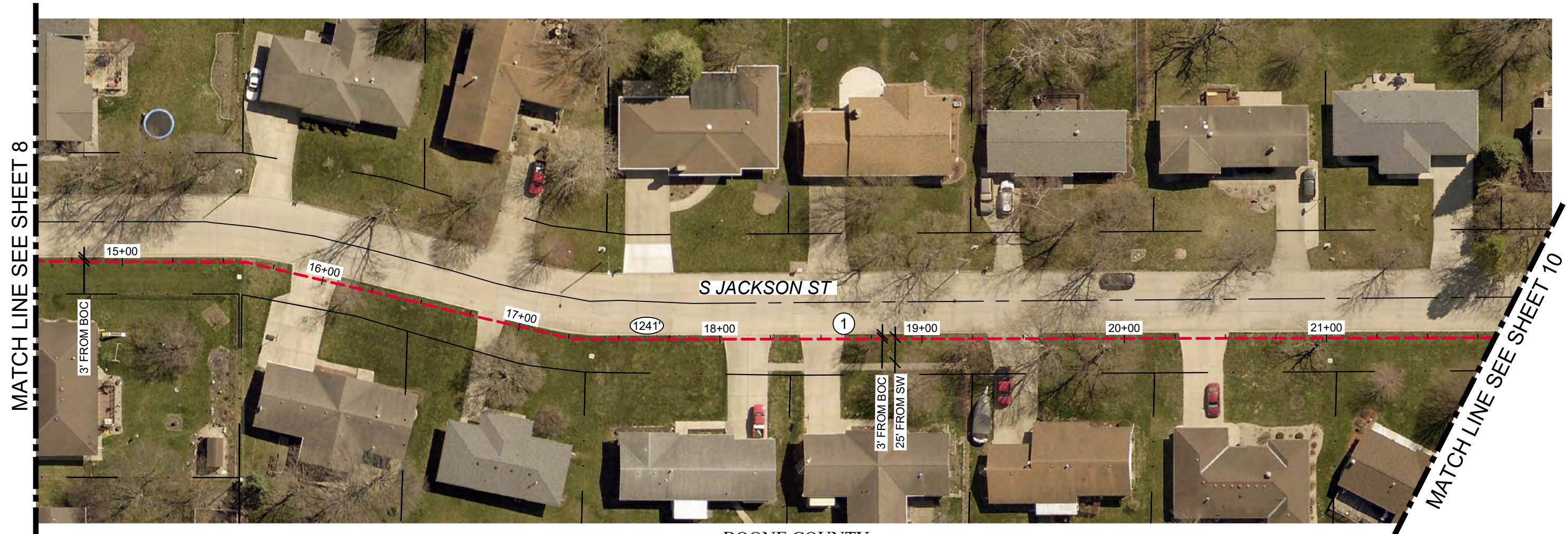
NOTE: RUNNING LINE TO BE ADJUSTED PER UTILITY LOCATES. CONTACT THE ICN AND BOONE COUNTY PUBLIC WORKS TO ADJUST RUNNING LINE



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE



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3	FINAL PERMIT PLANS	4/21/2023	
4			



MATCH LINE SEE SHEET 8

MATCH LINE SEE SHEET 10

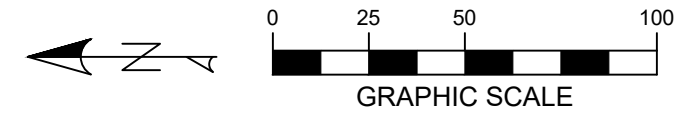
LOOKING WEST



BCSD STA. 15+60

**BOONE COUNTY
DES MOINES TOWNSHIP
T84-N R-26W**

- ① PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ② OTHER UTILITY PROVIDERS IN AREA. STAY 36" CLEAR FROM ALL EXISTING UTILITIES.
- ③ GAS MAIN RUNS PARALLEL WITH ROUTE IN WEST ROW OF S JACKSON ST. USE CAUTION WHEN BORING THIS AREA



LISTING OF HANDHOLES				
HANDHOLE	STATION	HANDHOLE	STATION	LENGTH FT
HH2	12+90	HH3	25+41	1251
TOTAL				1251

* LENGTH DOES NOT INCLUDE SLACKCOILS

NOTE: RUNNING LINE TO BE ADJUSTED PER UTILITY LOCATES. CONTACT THE ICN AND BOONE COUNTY PUBLIC WORKS TO ADJUST RUNNING LINE



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE

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3	FINAL PERMIT PLANS	4/21/2023	
4			



MATCH LINE SEE SHEET 9

MATCH LINE SEE SHEET 11

BOONE COUNTY
DES MOINES TOWNSHIP
T84-N R-26W

LOOKING NORTH



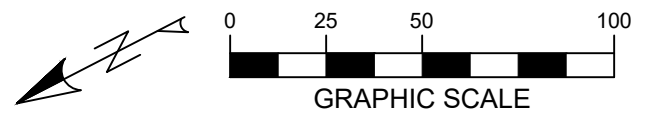
HH3 BCSD STA. 25+41

LOOKING SOUTH



BCSD STA. 25+60

- ① PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ② BCSD STA. 25+41 INSTALL PROPOSED 24"x36"x36" BCSD HANDHOLE - HH3 LINK BCSD-12 F/A 150' SLACK COIL
- ③ PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ④ OTHER UTILITY PROVIDERS IN AREA. STAY 36" CLEAR FROM ALL EXISTING UTILITIES.
- ⑤ GAS MAIN RUNS PARALLEL WITH ROUTE IN WEST ROW OF S JACKSON ST. USE CAUTION WHEN BORING THIS AREA
- ⑥ EXISTING ICN LINK 1110G (4/4F) PER ICN LOCATES



LISTING OF HANDHOLES				
HANDHOLE	STATION	HANDHOLE	STATION	LENGTH FT
HH2	12+90	HH3	25+41	1251
HH3	25+41	HH4	46+12	2071
TOTAL				3322

* LENGTH DOES NOT INCLUDE SLACKCOILS

NOTE: RUNNING LINE TO BE ADJUSTED PER UTILITY LOCATES. CONTACT THE ICN AND BOONE COUNTY PUBLIC WORKS TO ADJUST RUNNING LINE

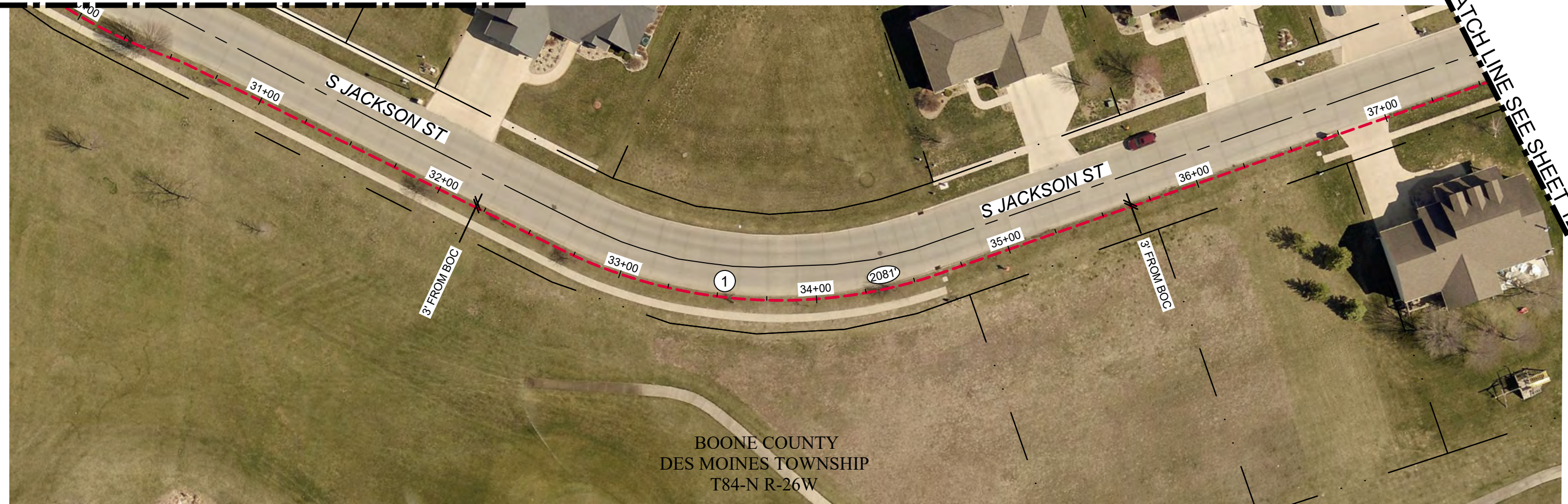


BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE

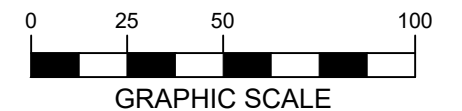
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2	90% PLAN REVIEW	4/20/2023	
3	FINAL PERMIT PLANS	4/21/2023	
4			

MATCH LINE SEE SHEET 10

MATCH LINE SEE SHEET 12



- ① PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ② OTHER UTILITY PROVIDERS IN AREA. STAY 36" CLEAR FROM ALL EXISTING UTILITIES.
- ③ GAS MAIN RUNS PARALLEL WITH ROUTE IN WEST ROW OF S JACKSON ST. USE CAUTION WHEN BORING THIS AREA



LISTING OF HANDHOLES				
HANDHOLE	STATION	HANDHOLE	STATION	LENGTH FT
HH3	25+41	HH4	46+12	2071
TOTAL				2071

* LENGTH DOES NOT INCLUDE SLACKCOILS



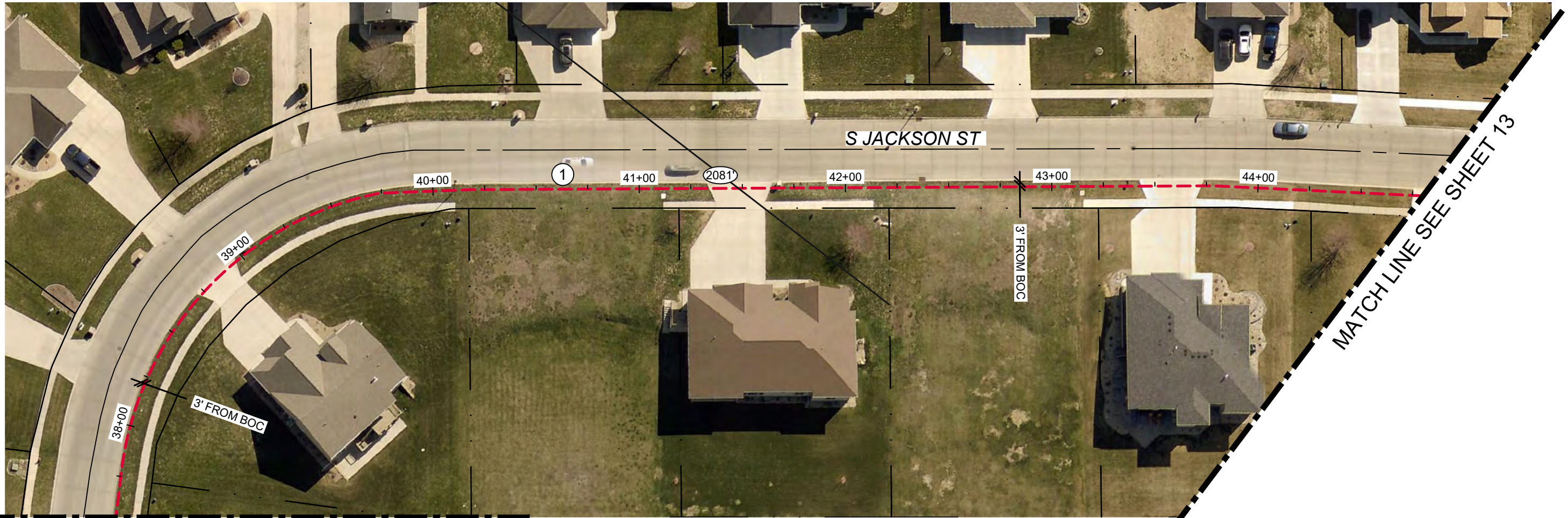
BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE



1	60% PLAN REVIEW	4/5/2023
2	90% PLAN REVIEW	4/20/2023
3	FINAL PERMIT PLANS	4/21/2023
4		

IOWA COMMUNICATIONS NETWORK
 400 EAST 14TH STREET
 GRIMES STATE OFFICE BUILDING
 DES MOINES, IOWA 50319
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NOTE: RUNNING LINE TO BE ADJUSTED PER UTILITY LOCATES. CONTACT THE ICN AND BOONE COUNTY PUBLIC WORKS TO ADJUST RUNNING LINE



MATCH LINE SEE SHEET 11

BOONE COUNTY
DES MOINES TOWNSHIP
T84-N R-26W

LOOKING SOUTH



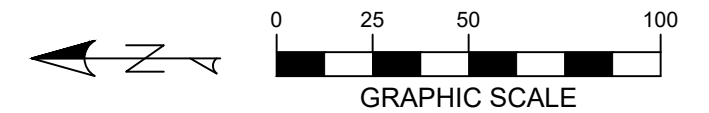
BCSD STA. 41+00

LOOKING WEST



BCSD STA. 41+50

- ① PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ② OTHER UTILITY PROVIDERS IN AREA. STAY 36" CLEAR FROM ALL EXISTING UTILITIES.
- ③ GAS MAIN RUNS PARALLEL WITH ROUTE IN WEST ROW OF S JACKSON ST. USE CAUTION WHEN BORING THIS AREA



LISTING OF HANDHOLES				
HANDHOLE	STATION	HANDHOLE	STATION	LENGTH FT
HH3	25+41	HH4	46+12	2071
TOTAL				2071

* LENGTH DOES NOT INCLUDE SLACKCOILS

NOTE: RUNNING LINE TO BE ADJUSTED PER UTILITY LOCATES. CONTACT THE ICN AND BOONE COUNTY PUBLIC WORKS TO ADJUST RUNNING LINE

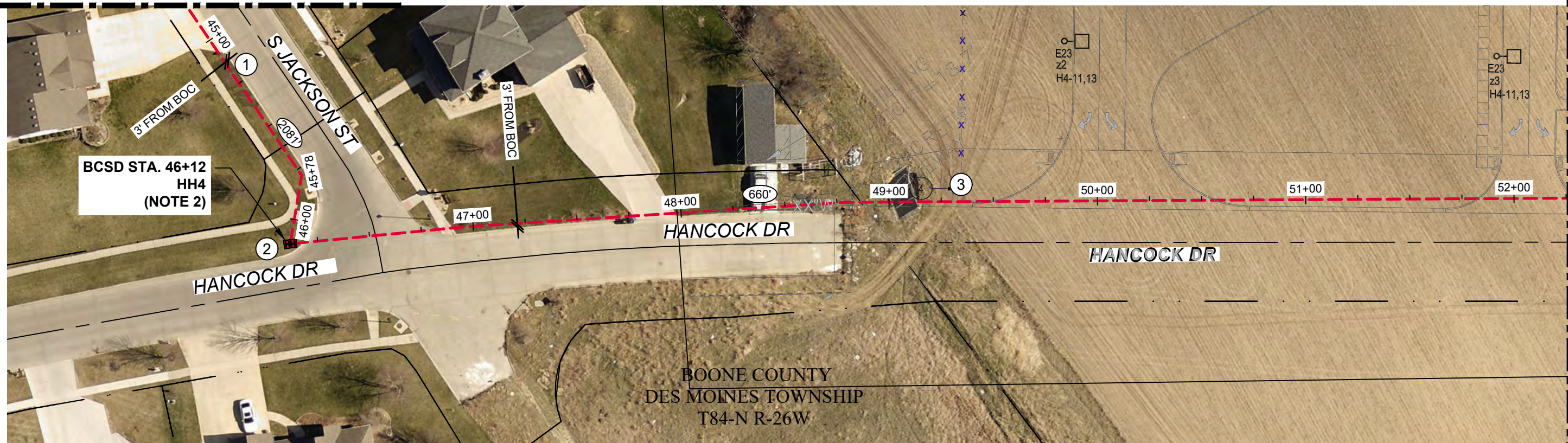


BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE

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2	90% PLAN REVIEW	4/20/2023
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hbk **ICN**
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MATCH LINE SEE SHEET 12



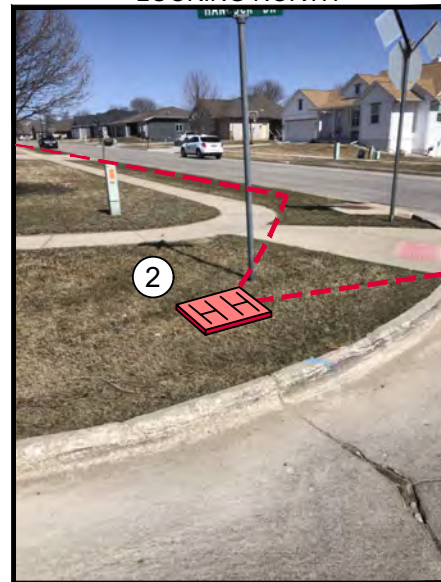
MATCH LINE SEE SHEET 14

LOOKING NORTH



BCSD STA. 46+00

LOOKING NORTH



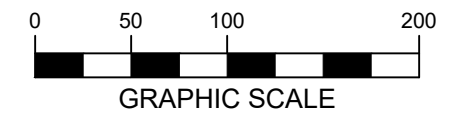
HH4 - BCSD STA. 46+12

LOOKING SOUTHEAST



BCSD STA. 47+00

- ① PULL NEW BCSD12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ② BCSD STA. 46+12 INSTALL PROPOSED 24"x36"x36" BCSD HANDHOLE - HH4 LINK BCSD-12 F/A 100' SLACK COIL
- ③ PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ④ OTHER UTILITY PROVIDERS IN AREA. STAY 36" CLEAR FROM ALL EXISTING UTILITIES.
- ⑤ GAS MAIN RUNS PARALLEL WITH ROUTE IN WEST ROW OF S JACKSON ST. USE CAUTION WHEN BORING THIS AREA
- ⑥ WATER MAIN RUNS PARALLEL WITH ROUTE IN NORTH ROW OF HANCOCK DR. USE CAUTION WHEN BORING THIS AREA



LISTING OF HANDHOLES

HANDHOLE	STATION	HANDHOLE	STATION	LENGTH FT
HH3	25+41	HH4	46+12	2071
HH4	46+12	HH5 - EX	52+72	660
TOTAL				2731

* LENGTH DOES NOT INCLUDE SLACKCOILS

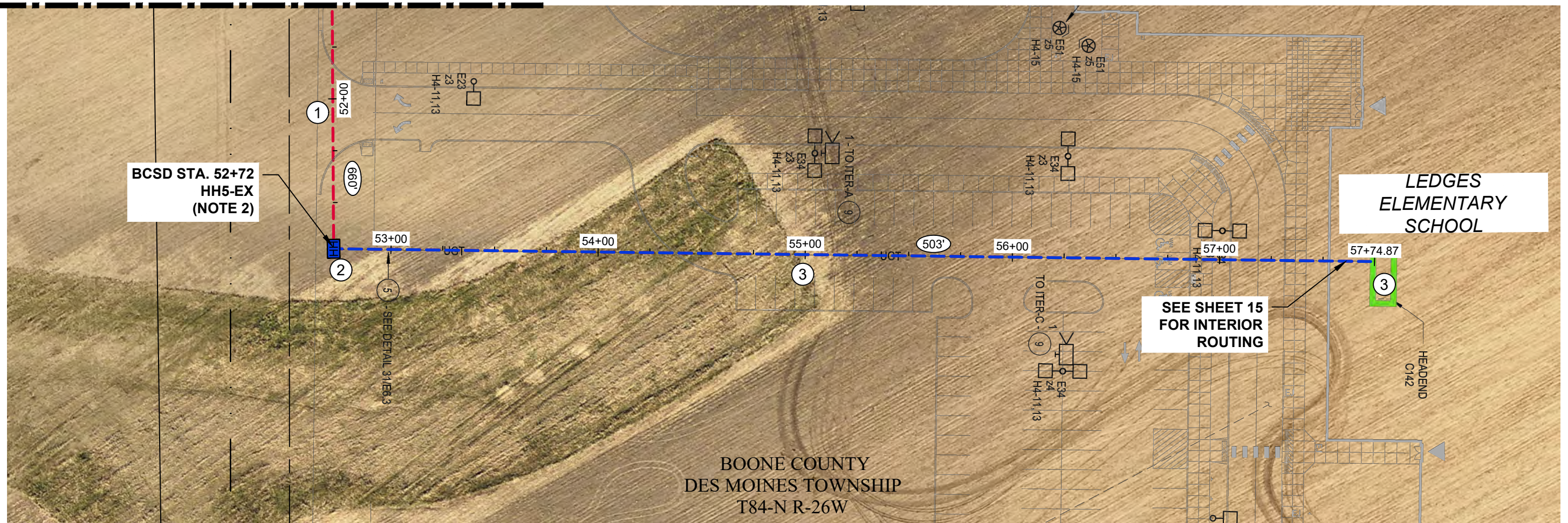
NOTE: RUNNING LINE TO BE ADJUSTED PER UTILITY LOCATES. CONTACT THE ICN AND BOONE COUNTY PUBLIC WORKS TO ADJUST RUNNING LINE



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE **hbk** **ICN**

1	60% PLAN REVIEW	4/5/2023	IOWA COMMUNICATIONS NETWORK 400 EAST 14TH STREET GRIMES STATE OFFICE BUILDING DES MOINES, IOWA 50319 ICN © 2021, COPY WITH PERMISSION
2	90% PLAN REVIEW	4/20/2023	
3	FINAL PERMIT PLANS	4/21/2023	
4			

MATCH LINE SEE SHEET 13



LOOKING NORTHEAST



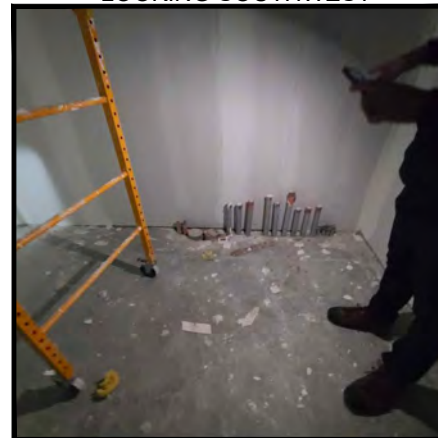
HH5-EX BCSD STA. 52+72

LOOKING NORTHWEST



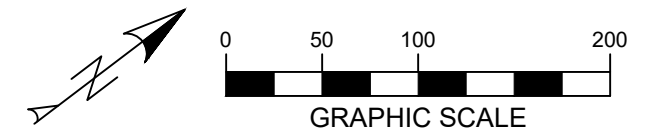
HH5-EX BCSD STA. 52+72

LOOKING SOUTHWEST



BOONE ELEMENTARY SCHOOL DATA ROOM - BCSD STA. 57+75

- ① PULL NEW BCSD 12 F/A THROUGH NEW 1-2" HDPE CONDUIT. 42" MINIMUM BELOW GRADE.
- ② BCSD STA. 52+72 EXISTING BCSD HANDHOLE - HH5-EX. ROUTE CONDUIT AND FIBER TO EXISTING HH TO TRANSITION TO EXISTING CONDUIT TO DATA ROOM C142. 100' OF SLACK.
- ③ PULL NEW BCSD 12 F/A THROUGH EXISTING 2" HDPE CONDUIT TO LEDGES ELEMENTARY SCHOOL DATA ROOM. LEAVE 50' OF SLACK FOR CABLE ROUTING AND TERMINATIONS
- ④ OTHER UTILITY PROVIDERS IN AREA. STAY 36" CLEAR FROM ALL EXISTING UTILITIES.
- ⑤ COORDINATE WITH THE ON SITE ELECTRICIAN MIKE CLARK WITH ENTERPRISE ELECTRIC (515-432-7162) FOR THE FINAL LOCATION OF THE HANDHOLE AND OWNER SUPPLIED CONDUIT INSTALLATION.



LISTING OF HANDHOLES				
HANDHOLE	STATION	HANDHOLE	STATION	LENGTH FT
HH4	46+12	HH5-EX	52+72	660
HH5-EX	52+72	BCSD DATA ROOM	57+75	503
TOTAL				1163

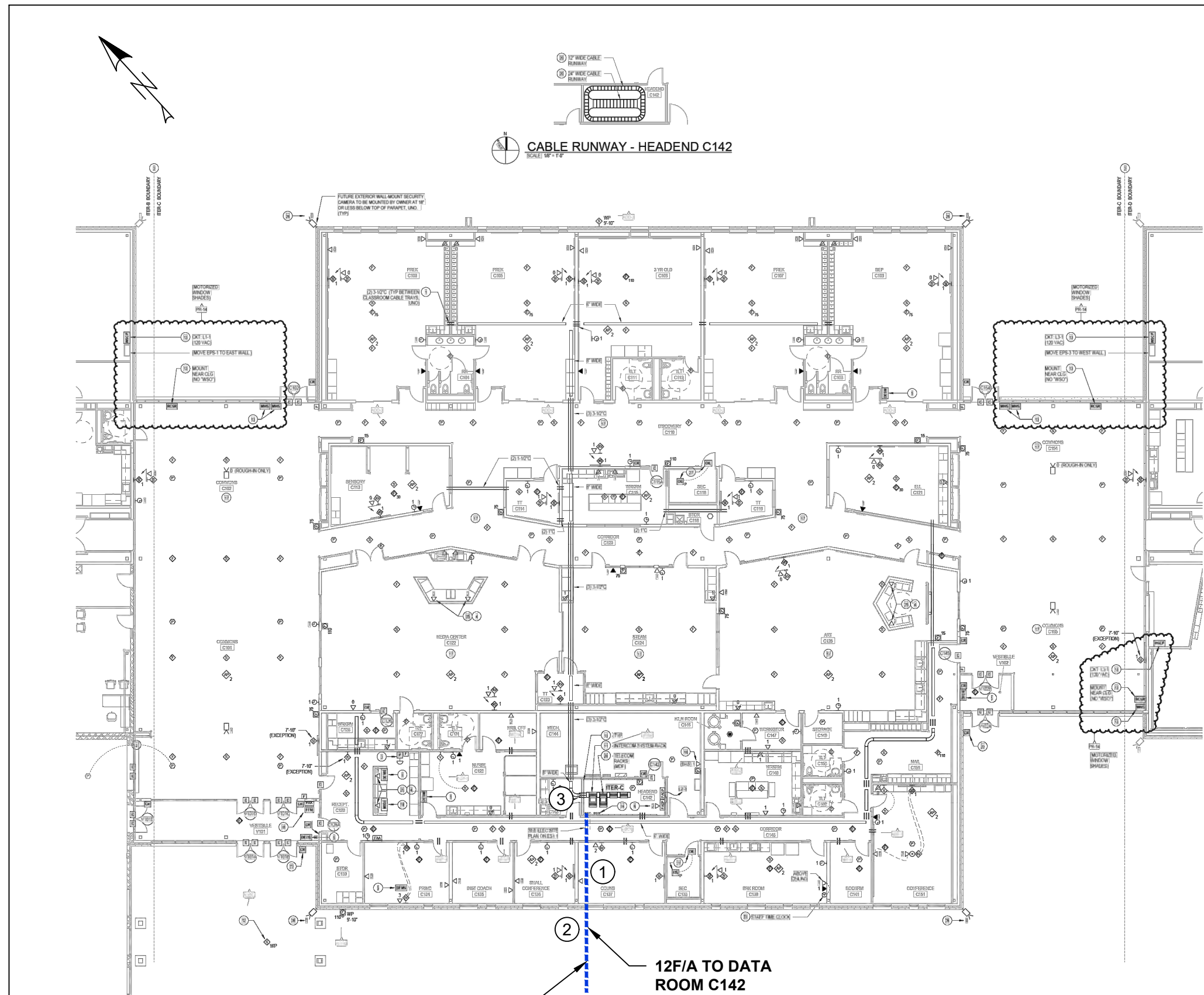
* LENGTH DOES NOT INCLUDE SLACKCOILS

NOTE: RUNNING LINE TO BE ADJUSTED PER UTILITY LOCATES. CONTACT THE ICN AND BOONE COUNTY PUBLIC WORKS TO ADJUST RUNNING LINE



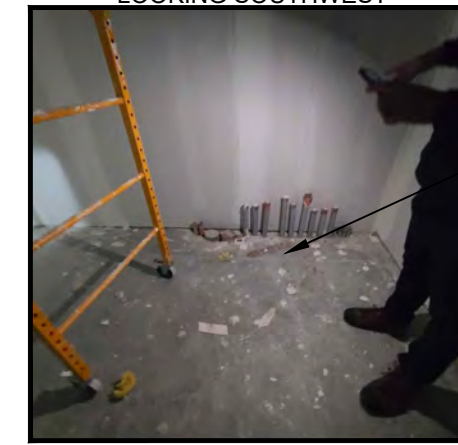
BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE

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2	90% PLAN REVIEW	4/20/2023	
3	FINAL PERMIT PLANS	4/21/2023	
4			



- ① PULL NEW BCSD 12 F/A THROUGH EXISTING 2" HDPE CONDUIT TO LEDGES ELEMENTARY SCHOOL DATA ROOM. LEAVE 50' OF SLACK FOR CABLE ROUTING AND TERMINATIONS
- ② COORDINATE WITH THE ON SITE ELECTRICIAN MIKE CLARK WITH ENTERPRISE ELECTRIC (515-432-7162) FOR THE FINAL LOCATION OF THE HANDHOLE AND OWNER SUPPLIED CONDUIT INSTALLATION.
- ③ COORDINATE WITH THE SITE CONTACT FOR BOONE COMMUNITY SCHOOL DISTRICT LEVI BABER REGARDING FIBER TERMINATION IN THE LEDGES ELEMENTARY SCHOOL DATA ROOM

LOOKING SOUTHWEST



#6 GROUND WIRE - BOND TO ARMORED JACKET AND GROUND BAR

BOONE ELEMENTARY SCHOOL DATA ROOM - BCSD STA. 57+75

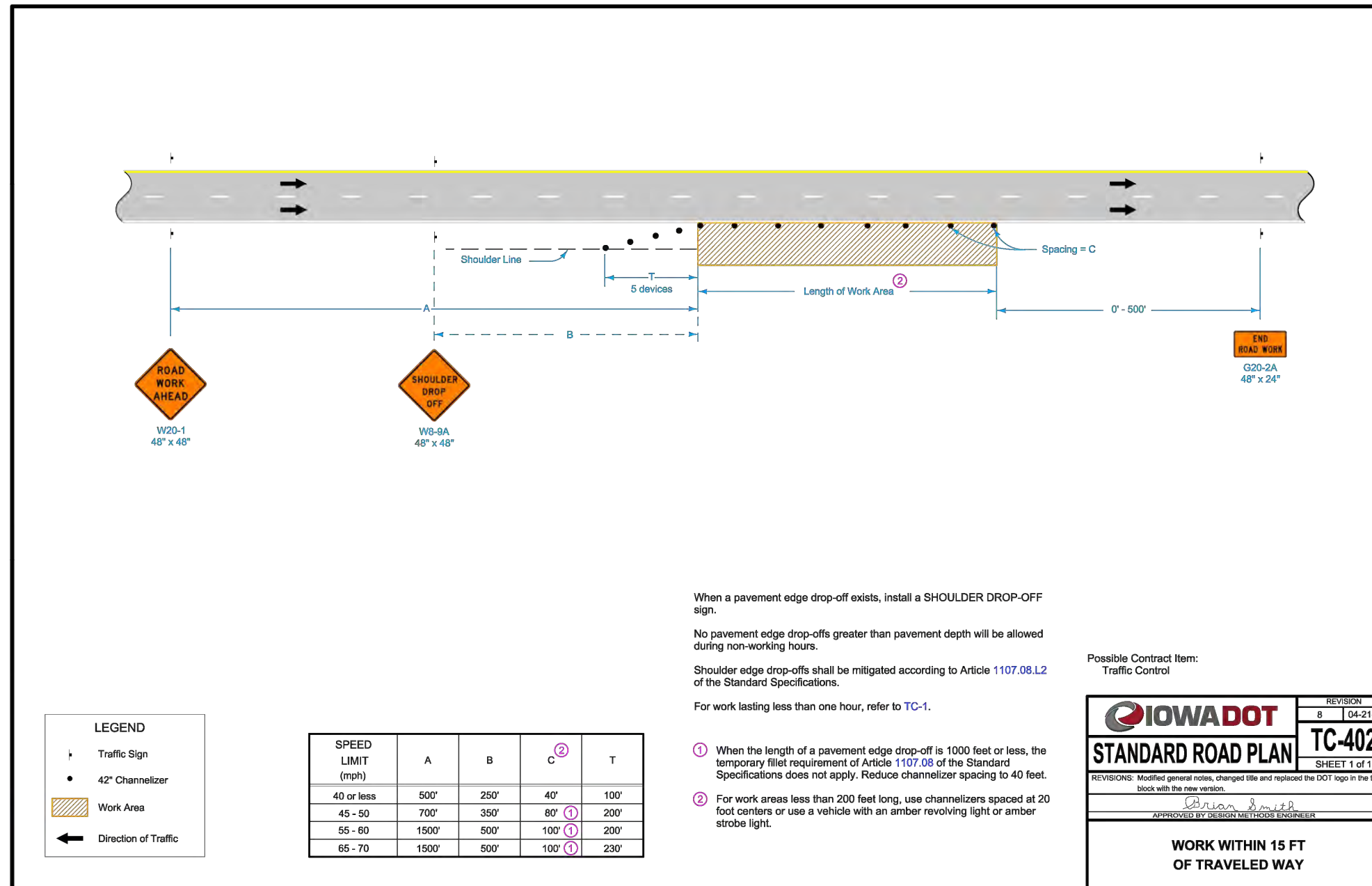
SEE SHEET 14 FOR EXTERIOR ROUTING

12F/A TO DATA ROOM C142



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE **hbk icn**

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2	90% PLAN REVIEW	4/20/2023	
3	FINAL PERMIT PLANS	4/21/2023	
4			



LEGEND

- Traffic Sign
- 42" Channelizer
- Work Area
- Direction of Traffic

SPEED LIMIT (mph)	A	B	C ②	T
40 or less	500'	250'	40'	100'
45 - 50	700'	350'	80' ①	200'
55 - 60	1500'	500'	100' ①	200'
65 - 70	1500'	500'	100' ①	230'

When a pavement edge drop-off exists, install a SHOULDER DROP-OFF sign.

No pavement edge drop-offs greater than pavement depth will be allowed during non-working hours.

Shoulder edge drop-offs shall be mitigated according to Article 1107.08.L2 of the Standard Specifications.

For work lasting less than one hour, refer to TC-1.

① When the length of a pavement edge drop-off is 1000 feet or less, the temporary fillet requirement of Article 1107.08 of the Standard Specifications does not apply. Reduce channelizer spacing to 40 feet.

② For work areas less than 200 feet long, use channelizers spaced at 20 foot centers or use a vehicle with an amber revolving light or amber strobe light.

Possible Contract Item:
Traffic Control

IOWADOT

STANDARD ROAD PLAN

REVISIONS: Modified general notes, changed title and replaced the DOT logo in the title block with the new version.

APPROVED BY DESIGN METHODS ENGINEER

WORK WITHIN 15 FT OF TRAVELED WAY

REVISION	NO.	DATE
8	04-21-15	

TC-402

SHEET 1 of 1

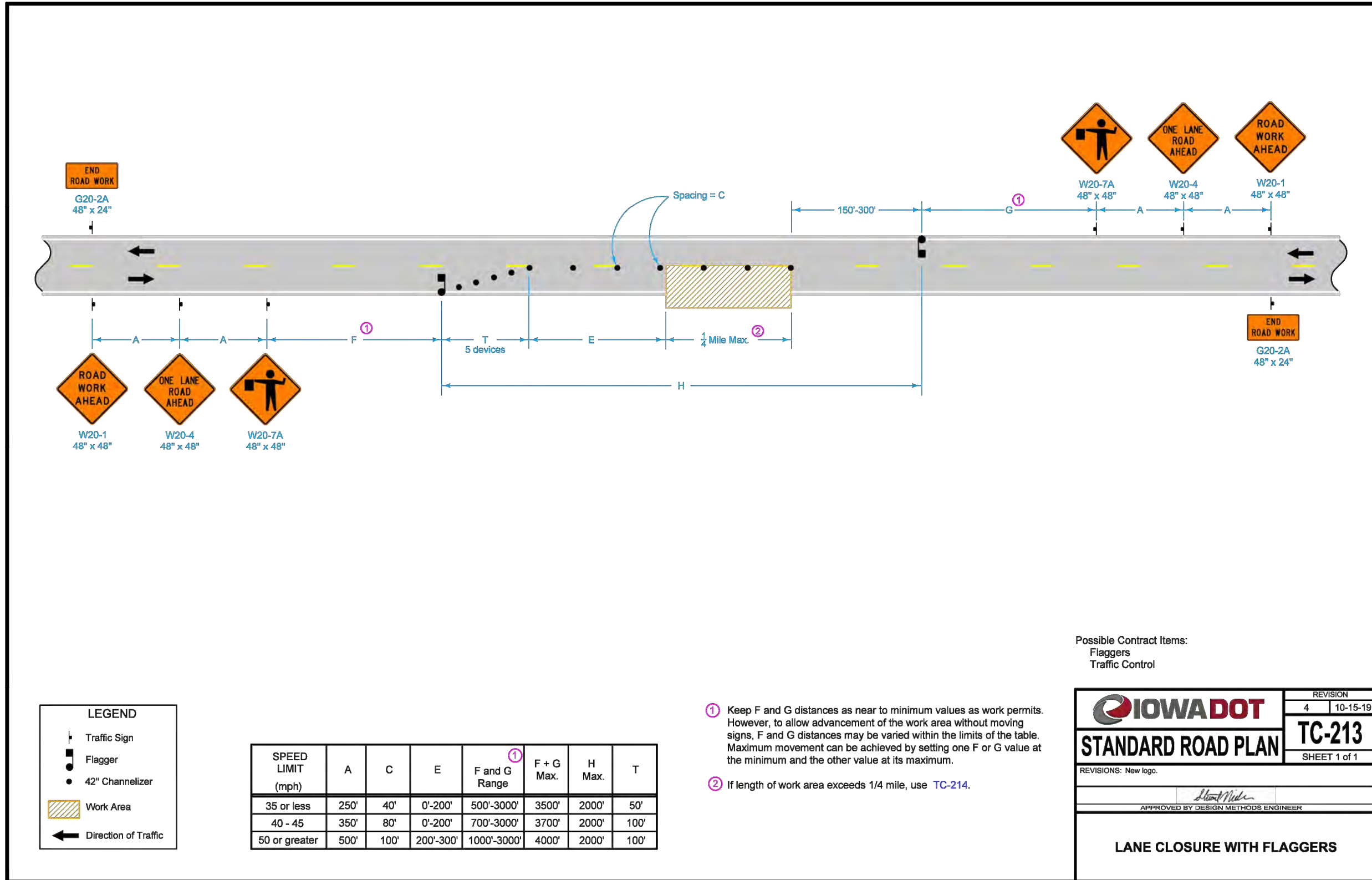


BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE



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LEGEND

- Traffic Sign
- Flagger
- 42" Channelizer
- Work Area
- Direction of Traffic

SPEED LIMIT (mph)	A	C	E	F and G Range ^①	F + G Max.	H Max.	T
35 or less	250'	40'	0'-200'	500'-3000'	3500'	2000'	50'
40 - 45	350'	80'	0'-200'	700'-3000'	3700'	2000'	100'
50 or greater	500'	100'	200'-300'	1000'-3000'	4000'	2000'	100'

- ① Keep F and G distances as near to minimum values as work permits. However, to allow advancement of the work area without moving signs, F and G distances may be varied within the limits of the table. Maximum movement can be achieved by setting one F or G value at the minimum and the other value at its maximum.
- ② If length of work area exceeds 1/4 mile, use TC-214.

Possible Contract Items:
 Flaggers
 Traffic Control

IOWA DOT	REVISION 4 10-15-19
	TC-213 SHEET 1 of 1
REVISIONS: New logo.	
<i>Steve Miller</i> APPROVED BY DESIGN METHODS ENGINEER	
LANE CLOSURE WITH FLAGGERS	

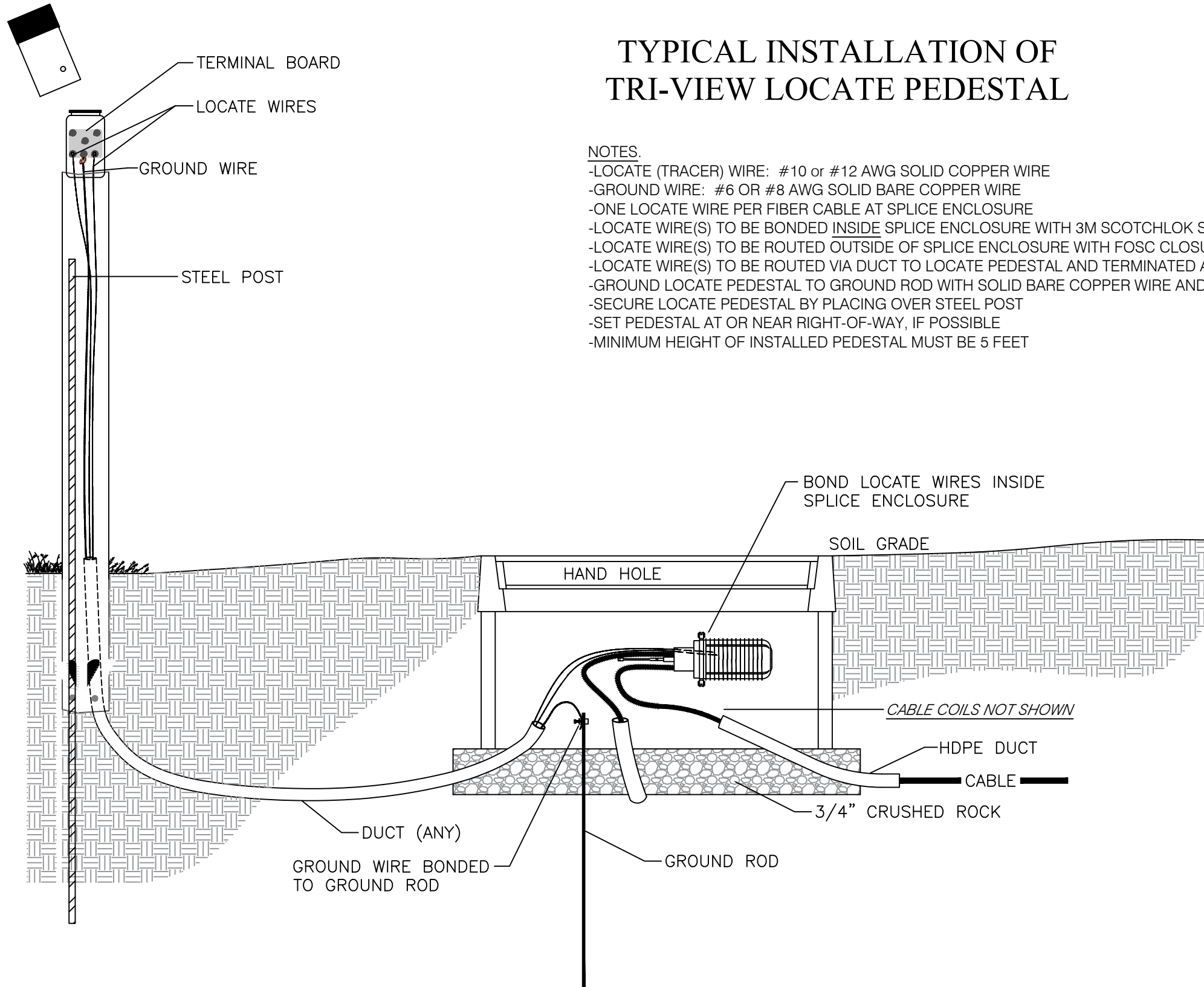
IOWA ONE CALL
 1-800-292-8989
 www.iowaonecall.com

BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE

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TYPICAL INSTALLATION OF TRI-VIEW LOCATE PEDESTAL



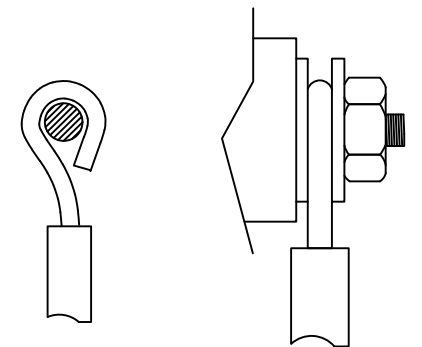
NOTES.

- LOCATE (TRACER) WIRE: #10 or #12 AWG SOLID COPPER WIRE
- GROUND WIRE: #6 OR #8 AWG SOLID BARE COPPER WIRE
- ONE LOCATE WIRE PER FIBER CABLE AT SPLICE ENCLOSURE
- LOCATE WIRE(S) TO BE BONDED INSIDE SPLICE ENCLOSURE WITH 3M SCOTCHLOK SHIELD BONDING KIT
- LOCATE WIRE(S) TO BE ROUTED OUTSIDE OF SPLICE ENCLOSURE WITH FOSC CLOSURE SEALING KIT
- LOCATE WIRE(S) TO BE ROUTED VIA DUCT TO LOCATE PEDESTAL AND TERMINATED AT TERMINAL BOARD
- GROUND LOCATE PEDESTAL TO GROUND ROD WITH SOLID BARE COPPER WIRE AND GROUND CLAMP
- SECURE LOCATE PEDESTAL BY PLACING OVER STEEL POST
- SET PEDESTAL AT OR NEAR RIGHT-OF-WAY, IF POSSIBLE
- MINIMUM HEIGHT OF INSTALLED PEDESTAL MUST BE 5 FEET

TRACER WIRE TERMINATION DETAIL

Termination of the locate wire at either a pedestal, puck, or in a splice case shall be made in the following fashion:

Strip off a minimum of 3/4" of insulation. Using a needle nose pliers bend a wire "eyelet" on the wire end in a clockwise manner. Use a flat washer on both sides of the wire eyelet when cinching it down on the stud. Flat washers shall be of appropriate size such that the hole matches the diameter of the stud and the outside diameter of the flat washer matches reasonably close to the eyelet diameter.



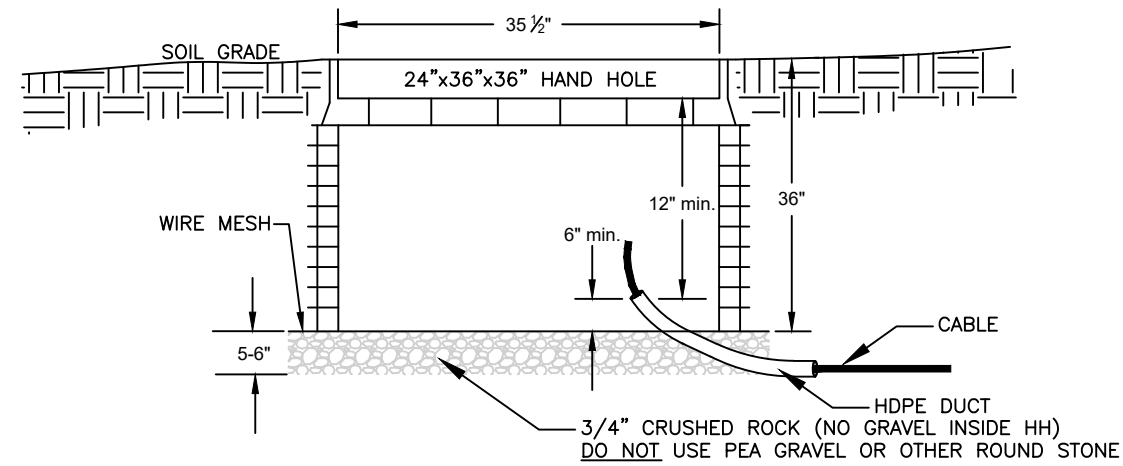
CONSTRUCTION DOCUMENT



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE			hbk	ICN
1	60% PLAN REVIEW	4/5/2023	IOWA COMMUNICATIONS NETWORK 400 EAST 14TH STREET GRIMES STATE OFFICE BUILDING DES MOINES, IOWA 50319 ICM © 2019, COPY WITH PERMISSION	
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4				

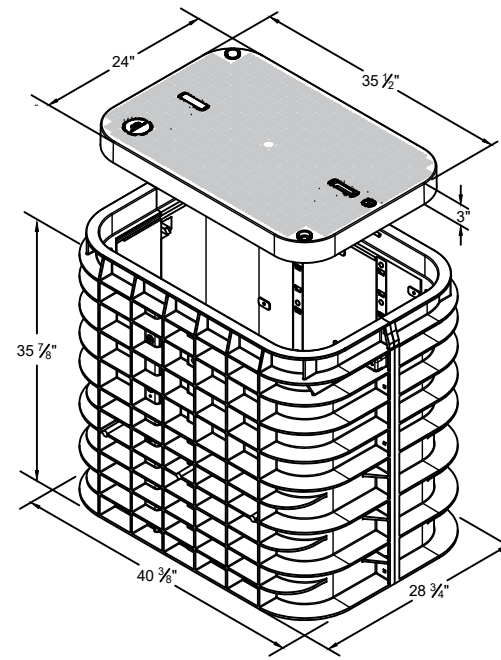
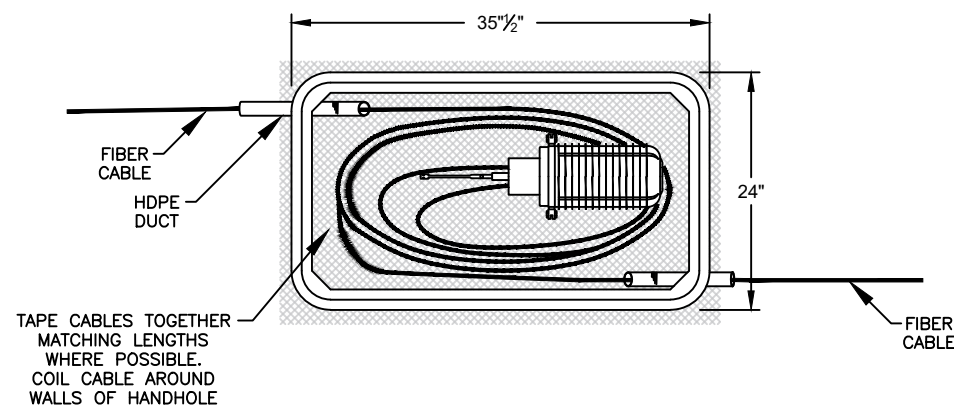
HANDHOLE PLACEMENT TYPICAL

24" X 36" X 36" HAND HOLE

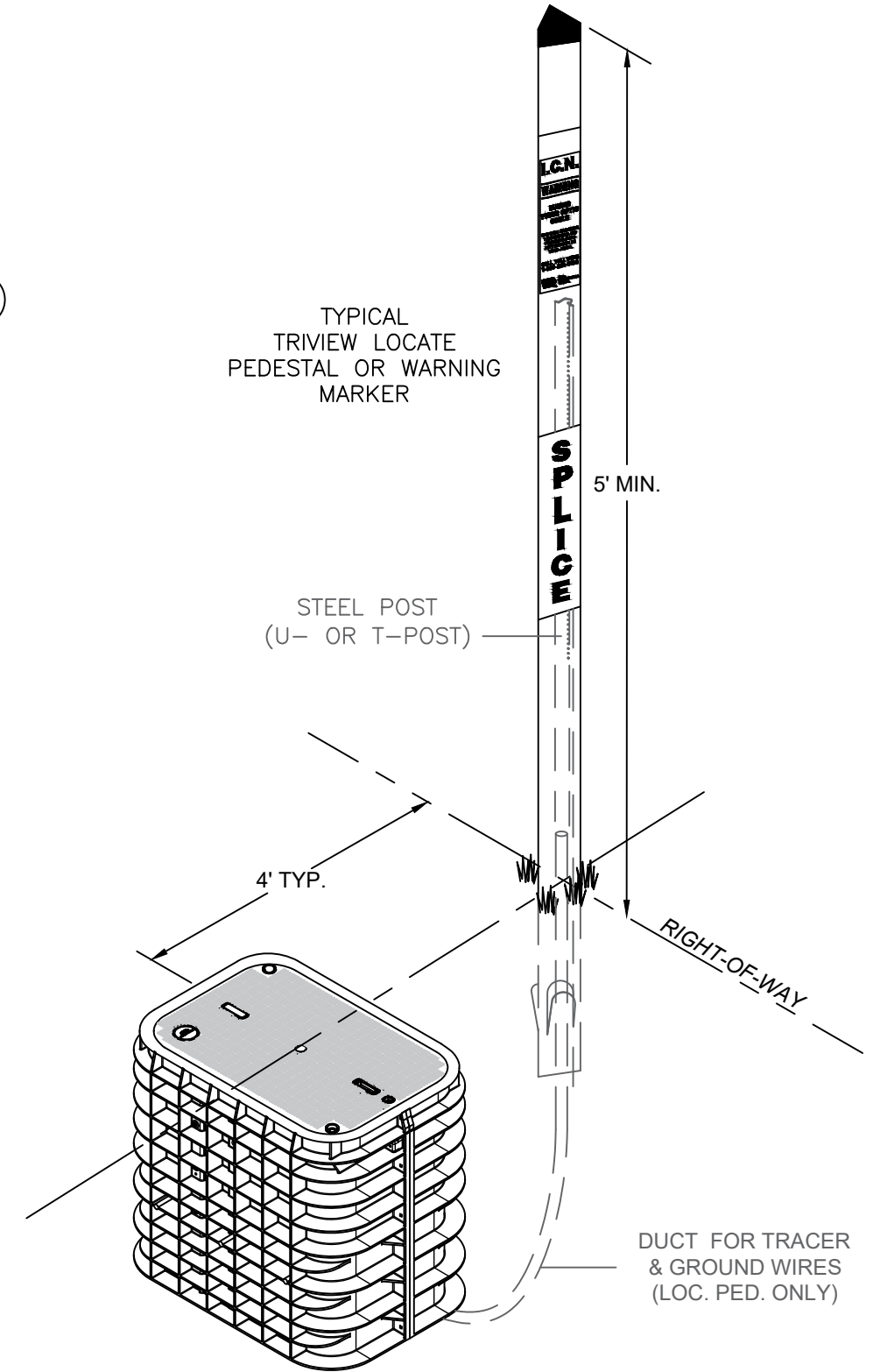


SEE INSTALLATION INSTRUCTIONS FOR PROPER PLACEMENT OF CHANNELL BULK HANDHOLE

TYPICAL TRIVIEW LOCATE PEDESTAL OR WARNING MARKER



BULK HANDHOLE TYPICAL
24"X36"X36"



BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY
SCHOOL EXISTING ENTRANCE



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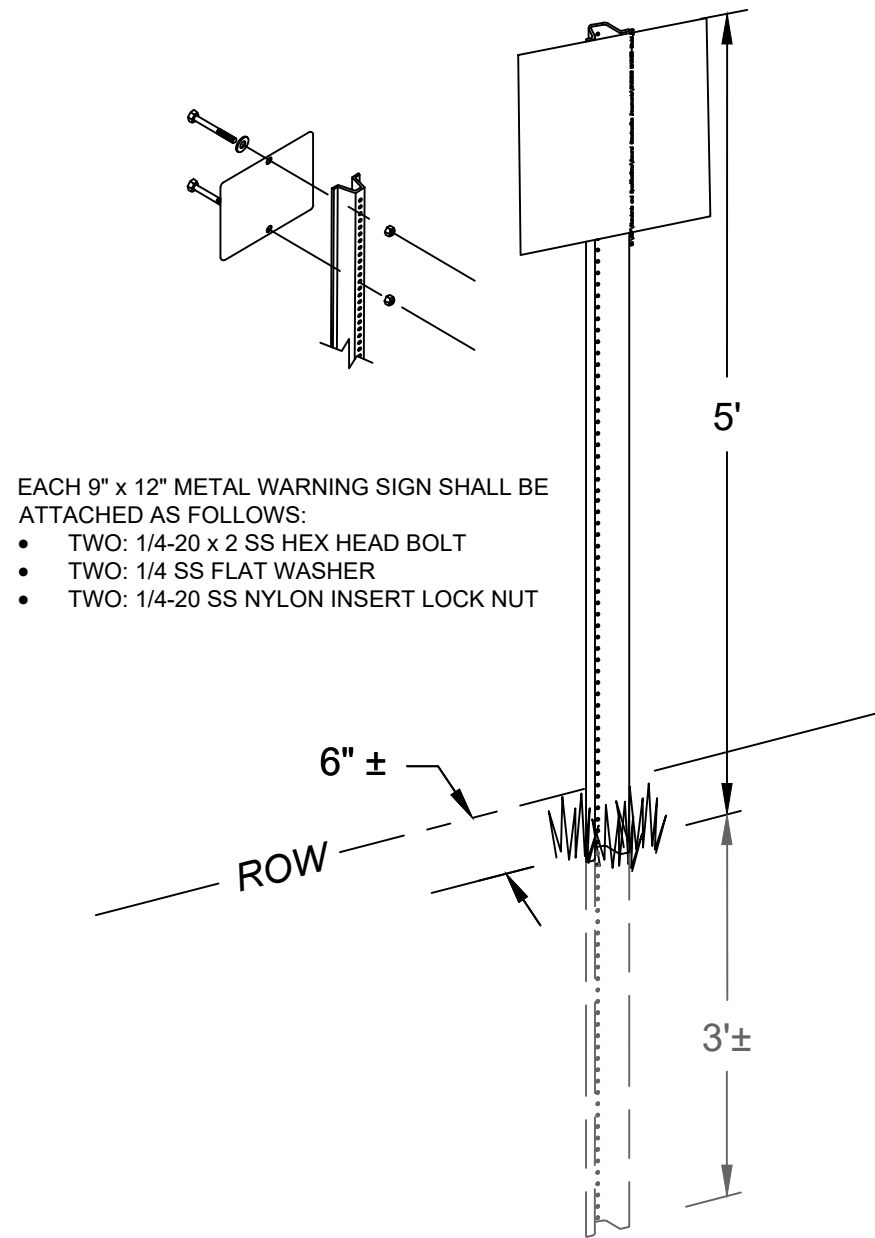
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WARNING MARKER INSTALLATION DETAIL

METAL SIGN & U-CHANNEL POST

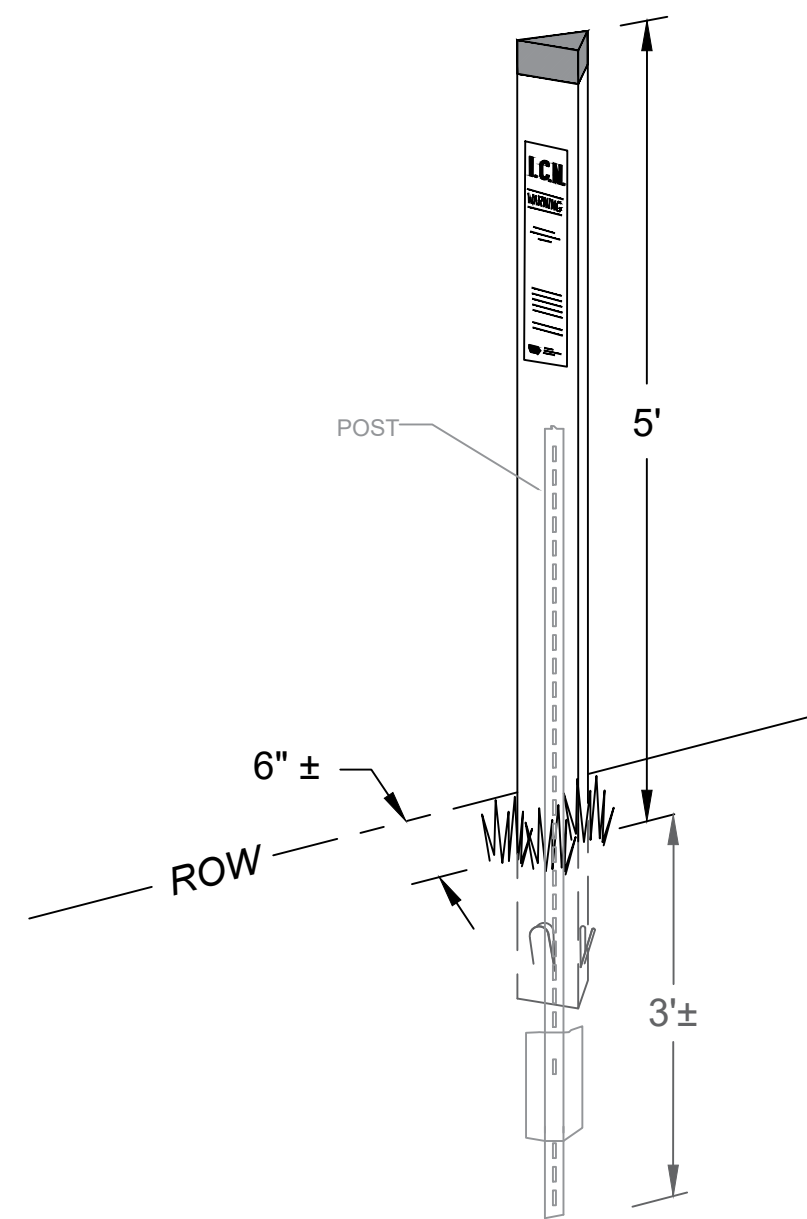
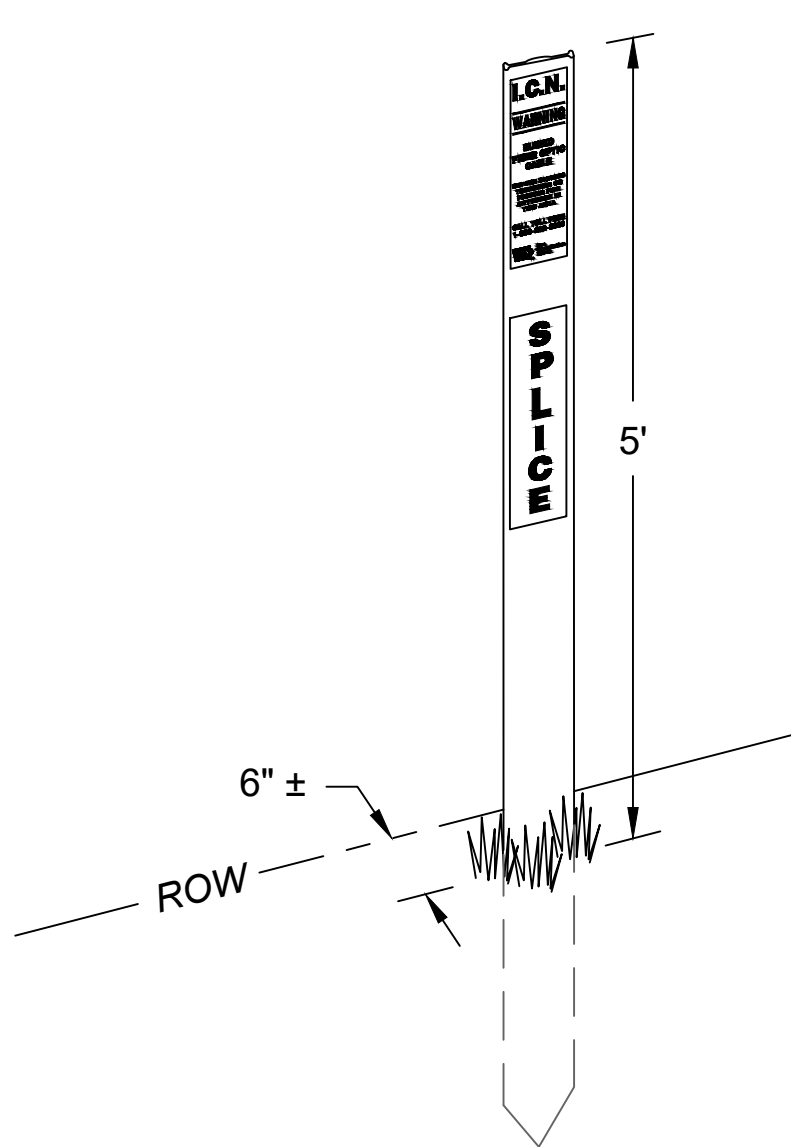
FIBERGLASS MARKER

TRIVIEW MARKER



EACH 9" x 12" METAL WARNING SIGN SHALL BE ATTACHED AS FOLLOWS:

- TWO: 1/4-20 x 2 SS HEX HEAD BOLT
- TWO: 1/4 SS FLAT WASHER
- TWO: 1/4-20 SS NYLON INSERT LOCK NUT



CONSTRUCTION DOCUMENT

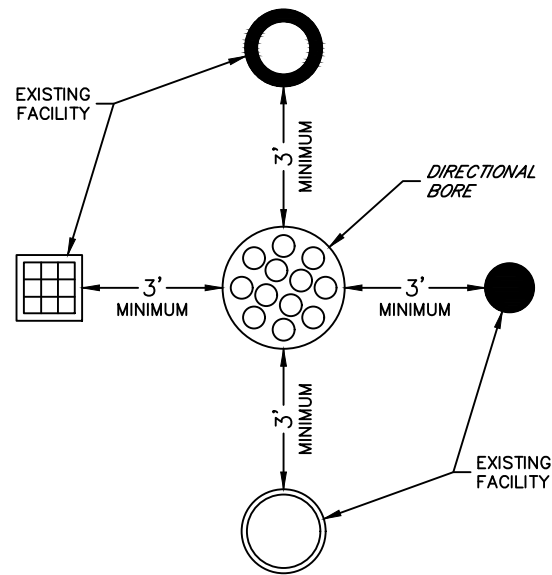


BOONE CSD MIDDLE SCHOOL TO NEW ELEMENTARY SCHOOL EXISTING ENTRANCE



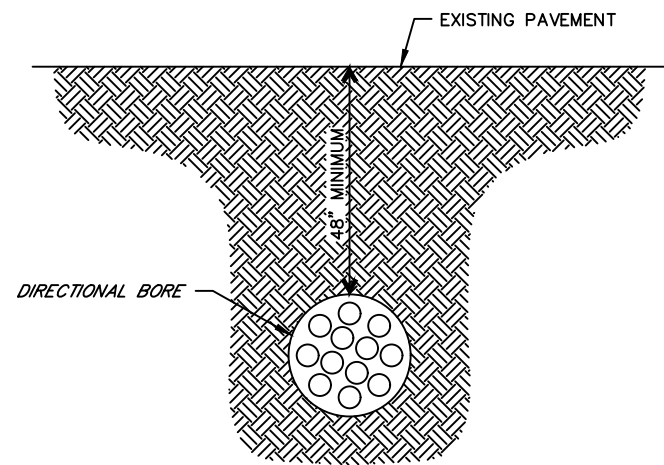
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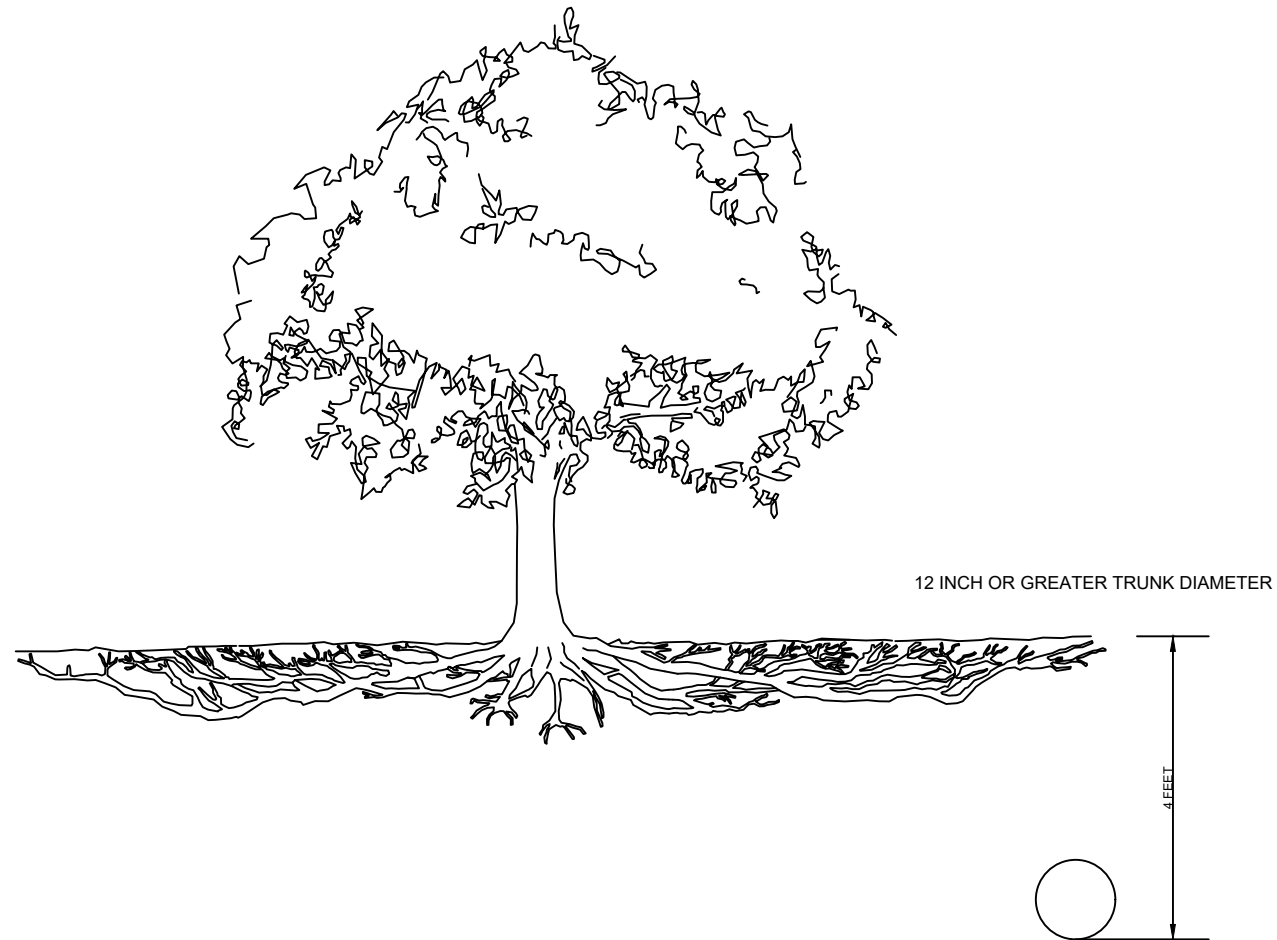


MAINTAIN A MINIMUM OF AT LEAST 3 FEET OF SEPARATION IN ANY DIRECTION BETWEEN DIRECTIONAL BORE AND ALL EXISTING FACILITIES.

UTILITY SEPARATION DETAIL



DIRECTIONAL BORING DETAIL



TREE PROTECTION - TUNNELING



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