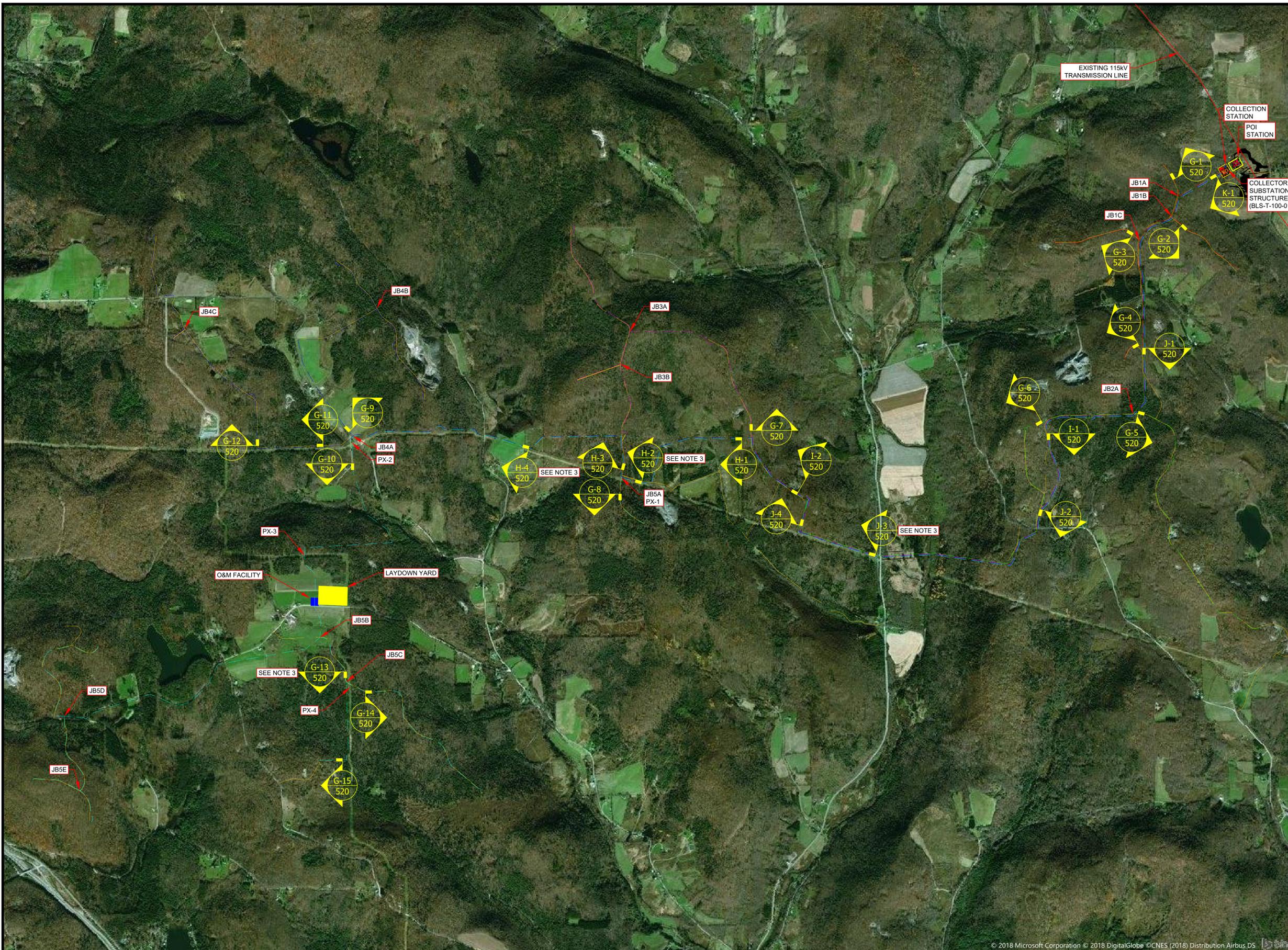


Bluestone Wind Buried Collection Line Details



LEGEND	
	ACCESS ROAD
	CIRCUIT 1
	CIRCUIT 2
	CIRCUIT 3
	CIRCUIT 4
	CIRCUIT 5
	EXISTING TRANSMISSION LINE
	WIND TURBINE GENERATOR (WTG)
	PIPELINE CROSSING REFER TO BLS-E-522-02

NOTES	
1.	ALL INFORMATION SHOWN IN THIS SYSTEM MAP IS CONCEPTUAL IN NATURE.
2.	LAYOUT IS BASED ON VESTAS V150-4.2 TURBINES WHICH HAVE A 4.2MW OUTPUT EACH.
3.	FOR FEEDER SECTIONS PARALLELING PIPELINES REFER TO DRAWING BLS-E-520-04 FOR SECTION DETAILS.

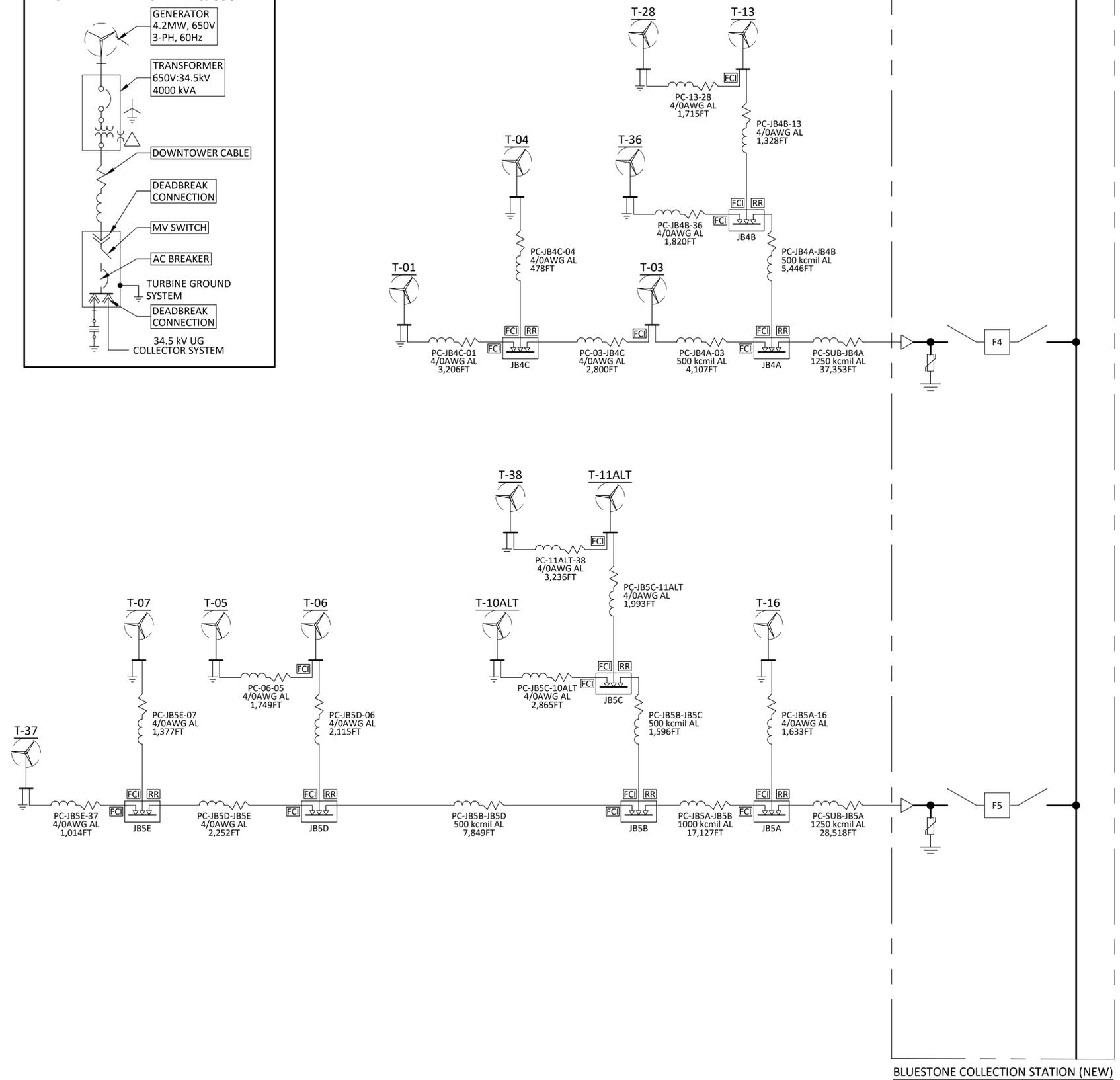
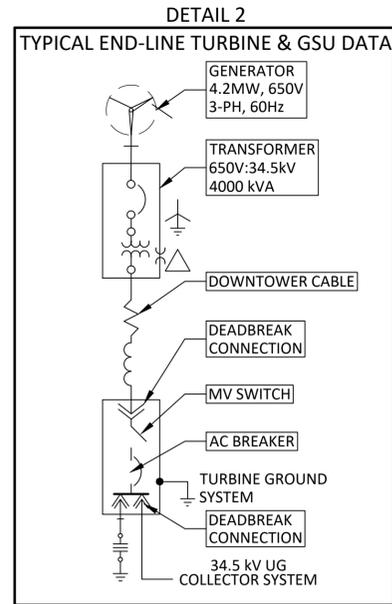
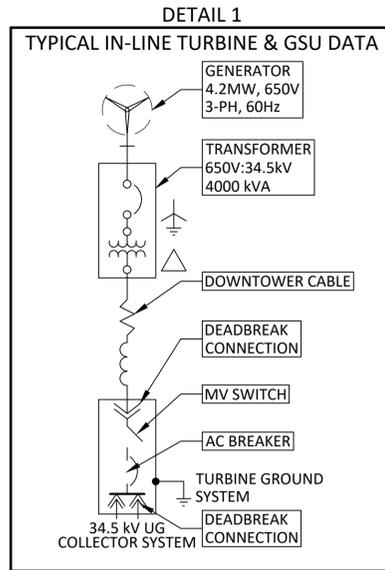
Rev	Date	Drawn	Description	Ch'k'd	App'd
E	8/22/2018	JRR	Issued for Review	DH	SA
D	8/17/2018	BK	Issued for Review	MB	SA
C	7/16/2018	BK	Issued for Review	MB	SA
B	7/06/2018	BK	Issued for Review	MB	SA
A	5/04/2018	MB	Issued for Review	SA	SA

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	Client

Title **BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
SYSTEM MAP**

<b>PRELIMINARY NOT FOR CONSTRUCTION</b> REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	MB	Eng check	SA
	Drawn	MB	Approved	SA
	Dwg check	SA	Project Mngr	HM
	Scale at ANSI D	N.T.S.	Date	8/17/2018
Drawing Number		BLS-E-500-01		

CONCEPTUAL - NOT FOR CONSTRUCTION



CONTINUED ON SHEET 1

**LEGEND**

- VESTAS V150 WIND TURBINE (SEE DETAILS 1 & 2, THIS DRAWING)
- JUNCTION BOX, 2-WAY, 35kV, 3-PH, 900A DEADBREAK
- JUNCTION BOX, 3-WAY, 35kV, 3-PH, 900A DEADBREAK
- T-BODY ELBOW ARRESTOR 35kV
- THREE-PHASE UNDERGROUND TEST-POINT RESET FAULT INDICATOR
- RadioRANGER WIRELESS INTERFACE
- CABLE RISER TERMINATION AT SUBSTATION 35kV, 3-PH
- POWER CABLE "PC" WITH LABEL, SIZE, AND LENGTH

**NOTES**

- ALL INFORMATION SHOWN IS CONCEPTUAL IN NATURE.
- LAYOUT IS BASED ON VESTAS V150-4.2 TURBINES WHICH HAVE A 4.2MW OUTPUT EACH.
- UNDERGROUND SPLICES AND IN-LINE JUNCTION BOXES ARE NOT SHOWN.

Rev	Date	Drawn	Description	Ch'kd	App'd
D	8/22/2018	JRR	Issued for Review	DH	SA
C	8/17/2018	BK	Issued for Review	MB	SA
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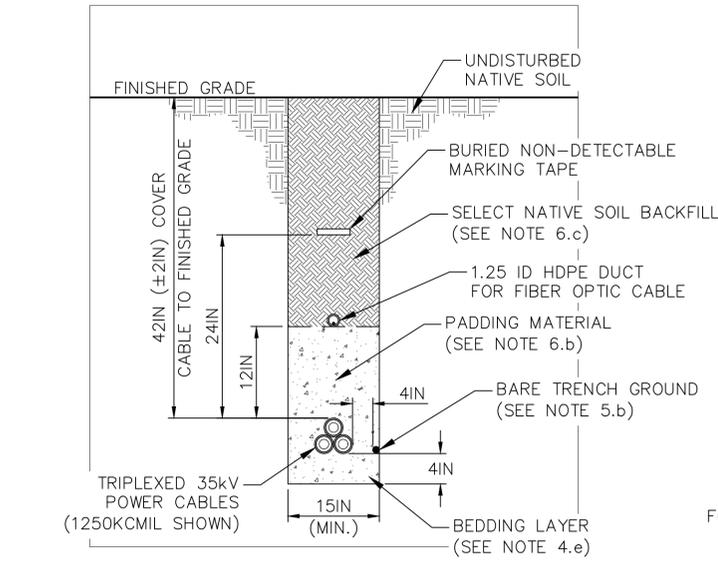
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Title  
**BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
SINGLE LINE DIAGRAM**

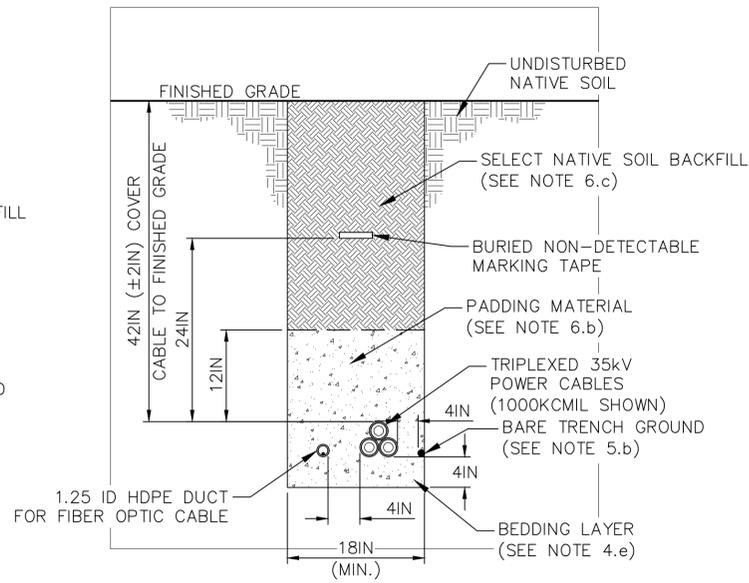
PRELIMINARY NOT FOR CONSTRUCTION REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	MB	Eng check	SA
	Drawn	MB	Approved	SA
	Dwg check	SA	Project Mngr	HM
	Scale at ANSI D	N.T.S.	Date	8/17/2018
			Rev	D
Drawing Number		BLS-E-501-02		

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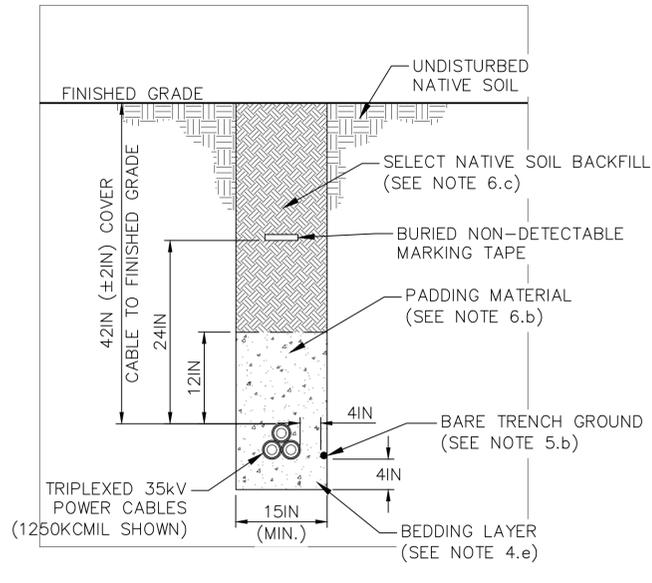
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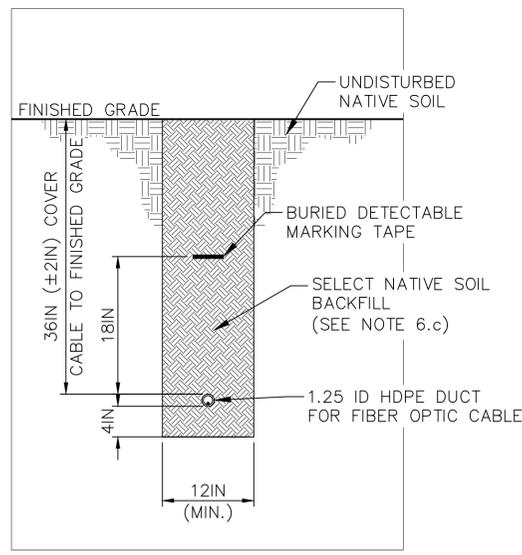
**A** PRIMARY POWER & COMMUNICATIONS CABLE DITCH  
Not to Scale



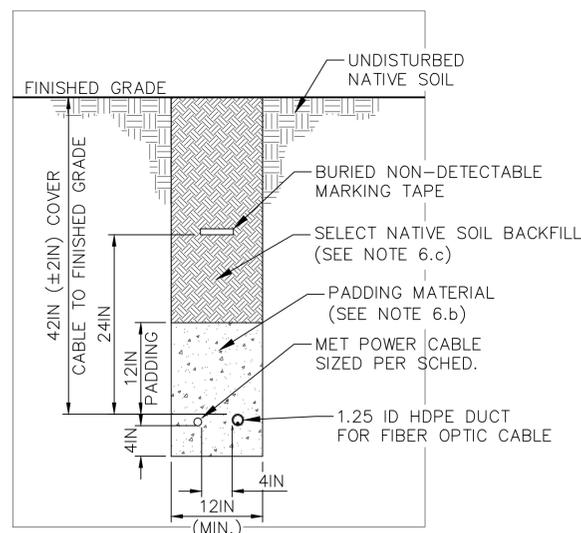
**B** ALTERNATE POWER & COMMUNICATIONS CABLE DITCH  
Not to Scale



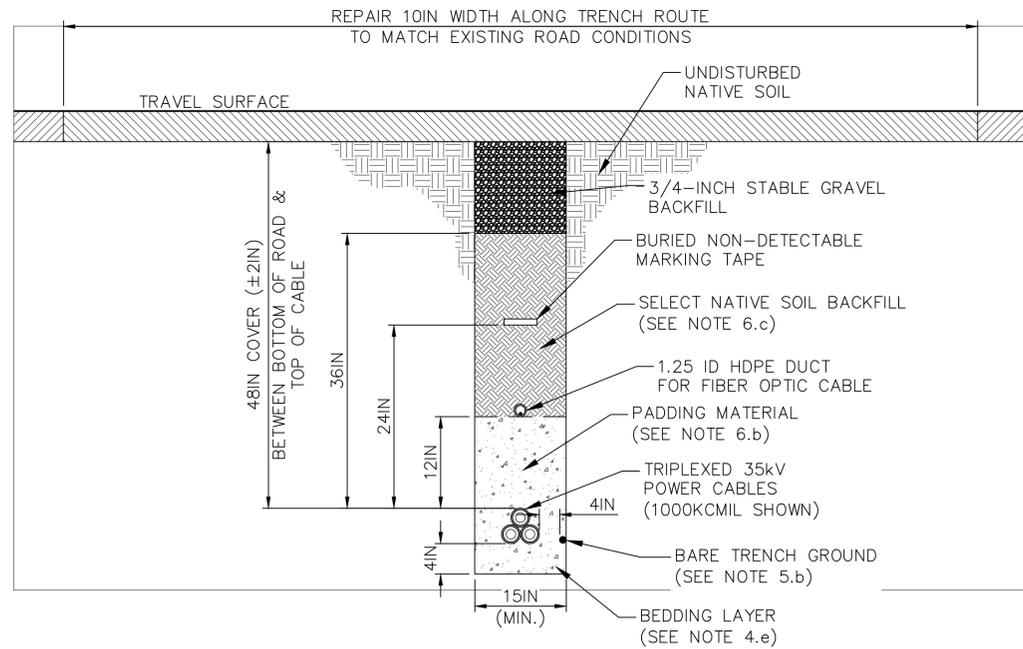
**C** 3-PHASE POWER ONLY CABLE DITCH  
Not to Scale



**D** FIBER ONLY DITCH  
Not to Scale



**E** MET TOWER & COMMUNICATION DITCH  
Not to Scale



**F** TYPICAL GRAVEL ROAD CROSSING DETAIL  
Not to Scale

NOTES

- ALL EXISTING UTILITIES MUST BE LOCATED BEFORE ANY EXCAVATION/TRENCHING IS STARTED. REGARDLESS OF OTHER UTILITY CONTACTS, CONTRACTOR MUST NOTIFY LOCAL LOCATING CLEARING HOUSE (I.E. ONECALL) OR OTHER STATE BODY.
- ALL GRADE SURFACES THAT ARE DISTURBED SHALL BE RESTORED TO ESSENTIALLY ORIGINAL CONDITION AND TO THE SATISFACTION OF THE OWNER.
- THE CABLE ROUTE TO BE FOLLOWED BY CONTRACTOR SHALL BE AS STAKED BY THE CONTRACTOR. ALL TRENCHES SHALL FOLLOW AS STRAIGHT A LINE AS PRACTICAL. ANY DEVIATION FROM THE ROUTING PROVIDED SHALL BE DISCUSSED WITH AND APPROVED BY THE OWNER PRIOR TO CONSTRUCTION. ROCK MAY BE REMOVED BY ANY MEANS CONTRACTOR PREFERENCES, EXCEPT BLASTING. BLASTING WILL NOT BE PERMITTED UNLESS SPECIFICALLY AUTHORIZED BY OWNER.
- IF THE GROUND WATER LEVEL IS ABOVE THE BOTTOM OF THE TRENCH THE CONTRACTOR AND OWNER SHALL DISCUSS AND AGREE UPON AN ALTERNATIVE CABLE INSTALLATION METHOD. IF THE GROUND WATER LEVEL IS BELOW THE BOTTOM OF THE TRENCH THE FOLLOWING REQUIREMENTS SHALL BE SATISFIED:
  - EVERY TRENCH MUST BE A MINIMUM OF 12-INCHES WIDE (WITH PROPER SLOPE FOR WEAK SOILS), AND MUST PROVIDE SUFFICIENT SPACE TO ALLOW COMPACTION AS SPECIFIED WITH THE EQUIPMENT BEING UTILIZED. THE CONTRACTOR SHALL ENSURE THAT SUFFICIENT AMOUNT OF FINE SOIL IS ADDED ABOVE CABLE FOR BACKFILL.
  - THE TOP SOIL MUST BE PUSHED TO ONE SIDE OF THE TRENCH ROUTE AND KEPT SEPARATE FROM BASE MATERIAL. THE STORED TOP SOIL IS TO BE SPREAD UNIFORMLY OVER THE AREA DISTURBED BY TRENCHING FOLLOWING BACKFILL AND COMPACTION.
  - CONTRACTOR SHALL PROTECT ALL TRENCHES AND OTHER EXCAVATIONS FROM SURFACE WATER RUNOFF. ANY WATER THAT HAS ACCUMULATED IN THE EXCAVATION SHALL BE REMOVED AND ANY SOFT TRENCH BOTTOM REMOVED AND REPLACED PRIOR TO THE INSTALLATION OF THE CABLES. THIS INCLUDES REMOVAL AND REPLACEMENT OF SAND BACKFILL THAT HAS BECOME CONTAMINATED WITH SILT, ROCKS, MUD, CLAY, ETC. THE REMOVAL OF WATER AND CORRECTION OF SOFT GROUND CONDITIONS DUE TO SURFACE WATER WILL BE THE RESPONSIBILITY OF CONTRACTOR.
  - CONTRACTOR MUST PROTECT THE PUBLIC AND LIVESTOCK FROM ALL TRENCHES AND EXCAVATIONS BY UTILIZING SUITABLE BARRICADES OR OTHER WARNING DEVICES.
  - ALL TRENCHES SHALL BE EXCAVATED TO DEPTH AS NECESSARY TO MAINTAIN THE SPECIFIED COVER OVER THE INSTALLED CABLE. IF THE BOTTOM OF THE TRENCH CONTAINS ROCKS, WOOD, VEGETATION MATERIAL OR OTHER HARD, ROUGH, OR SHARP MATERIALS THAT COULD DAMAGE THE CABLE, THE TRENCH SHALL BE OVER-EXCAVATED AND BACKFILLED WITH A 4-INCH LAYER OF COMPACTED FINE CLEAN SOIL (NOTHING LARGER THAN WHAT WOULD PASS THROUGH A 3/8-INCH SCREEN) OR SAND PRIOR TO THE CABLE BEING LAID IN PLACE.
  - ALL DIRECT BURIED POWER CABLES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING:
    - 34.5KV CABLES SHALL BE PLACED IN A TRIANGULAR CONFIGURATION, WITH NO INTENTIONAL SEPARATION, SECURED TOGETHER AS NEEDED WITH CABLE TIES TO ENSURE THEY REMAIN IN THIS CONFIGURATION DURING AND AFTER INSTALLATION & BACK-FILL. PROPER TIE-WRAP TOOLS SHALL BE USED TO PREVENT OVER-TIGHTENING OF THE CABLE TIE.
    - A 4/0 BARE COPPER WIRE SHALL RUN IN THE TRENCH WITH THE POWER CABLES. THERE SHALL BE A MINIMUM OF 4 INCHES OF SEPARATION BETWEEN THIS WIRE AND THE POWER CONDUCTORS PER WIND TURBINE GENERATOR MANUFACTURER'S REQUIREMENT OF THERE BEING INTENTIONAL SEPARATION.
    - WHEN INSTALLED ABOVE THE POWER CABLES, THE INNERDUCT FOR FIBER OPTIC COMMUNICATION CABLE SHALL BE LAID ON TOP OF THE PADDING MATERIAL. WHEN INSTALLED AT THE SAME DEPTH AS THE POWER CABLE, THE INNERDUCT AND THE POWER CABLE SHALL BE SEPARATED BY A MINIMUM OF 4 INCHES.
    - WHERE TWO OR MORE PARALLEL COMMUNICATION CABLES ARE REQUIRED IN TRENCH, LAY EACH INNERDUCT NEXT TO EACH OTHER WHILE STILL MAINTAINING CLEARANCES SHOWN.
  - BACKFILL AND COMPACTION REQUIREMENTS ARE AS FOLLOWS:
    - ALL EXCAVATED AREAS, INCLUDING TRENCHES AND BELL HOLES MUST BE THOROUGHLY COMPACTED TO NO LESS THAN 85% STANDARD PROCTOR OR 105% P.S.F. UNLESS OTHERWISE NOTED IN THE PROJECT GEO-TECHNICAL REPORT. COMPACTION SHALL BE BY PROVEN METHODOLOGY. SPECIAL CARE MUST BE TAKEN IN THE AREAS WHERE THE THERMAL TESTING OF SOILS IN THAT AREA INDICATES A POTENTIALLY HIGH RESISTIVITY. COMPACTION BY FLOODING WILL NOT BE PERMITTED.
    - THE FIRST 12-INCHES OF BACKFILL ABOVE THE CABLE (THIS IS THE CABLE PADDING) MUST BE FREE OF ROCKS, TOP SOIL, ROOTS, AND OTHER ORGANIC MATTER (NOTHING LARGER THAN WHAT WOULD PASS THROUGH A 3/8-INCH SCREEN). IF HEAVY STIFF CLAY IS ENCOUNTERED, THE NATIVE MATERIAL MUST BE EITHER MIXED WITH SANDY SOIL FROM OTHER STRATA IN THE SAME TRENCH, MIXED WITH FINE GRADE SAND THAT IS IMPORTED, OR REPLACED WITH IMPORTED MATERIAL.
    - SELECT NATIVE SOIL CAN BE USED FOR THE REMAINDER OF THE TRENCH BACKFILL EXCEPT THAT LARGE CLUMPS AND ROCKS LARGER THAN 4-INCHES MUST BE EXCLUDED AND SUFFICIENT FINES PROVIDED TO ELIMINATE Voids.
    - AT THE BEGINNING OF THE TRENCH BACKFILLING OPERATION, THE CONTRACTOR AND THE OWNER SHALL DETERMINE THE SUITABILITY OF THE NATIVE SOIL FOR USE AS BACKFILL, AND ANY ADDITIONAL MEASURES THAT MAY BE REQUIRED TO ENSURE ADEQUATE COMPACTION.
    - THE CONTRACTOR SHALL FILL THE TRENCH TO PRE-CONSTRUCTION GRADE WITH THE STOCKPILED TOP SOIL AND WITH ADDITIONAL BACKFILL ADDED TO ALLOW FOR SETTLING. CONTRACTOR MAY SLIGHTLY OVERFILL TRENCH IN ORDER TO ALLOW FOR SETTLING.
  - CONTRACTOR SHALL PROVIDE AND INSTALL A PLASTIC WARNING TAPE IN ALL TRENCHES DURING BACKFILLING. THIS TAPE SHALL BE INSTALLED APPROXIMATELY 24-INCHES ABOVE THE CABLES. THE TAPE SHALL BE 6" WIDE, RED WITH BLACK LETTERS, MARKED "CAUTION - BURIED ELECTRIC LINES BELOW".
  - EXCAVATED SOIL AND ROCK THAT IS NOT REUSED IN BACKFILLING THE TRENCHES IS TO BE DISTRIBUTED ACROSS THE SITE PER THE DIRECTION OF THE OWNER.
  - ALL EXCAVATION, TRENCHING AND ELECTRICAL SYSTEM CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THE FORMAL STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE PROJECT.

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	8/22/2018	JRR	Issued for Review	DH	SA
A	5/04/2018	MB	Issued for Review	SA	SA

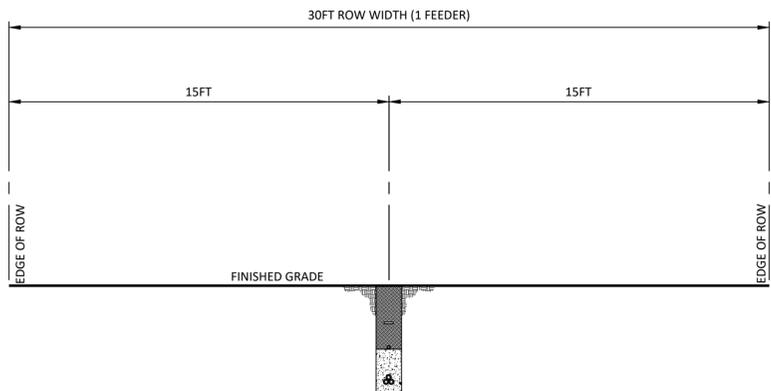
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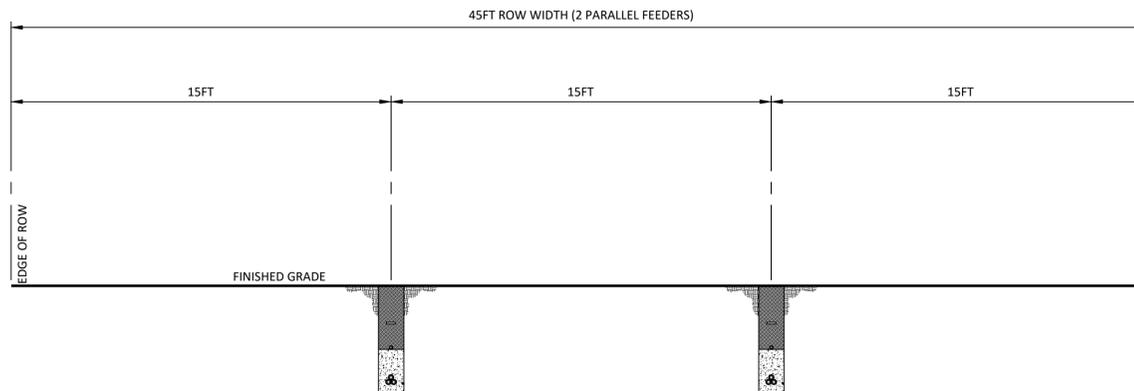
Title  
**BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
CABLE TRENCH DETAILS**

Designed	MB	Eng check	SA
Drawn	MB	Approved	SA
Dwg check	SA	Project Mngr	HM
Scale at ANSI D	N.T.S.	Date	5/04/2018
AND/OR FABRICATION		Rev	<b>B</b>
Drawing Number	<b>BLS-E-520-01</b>		



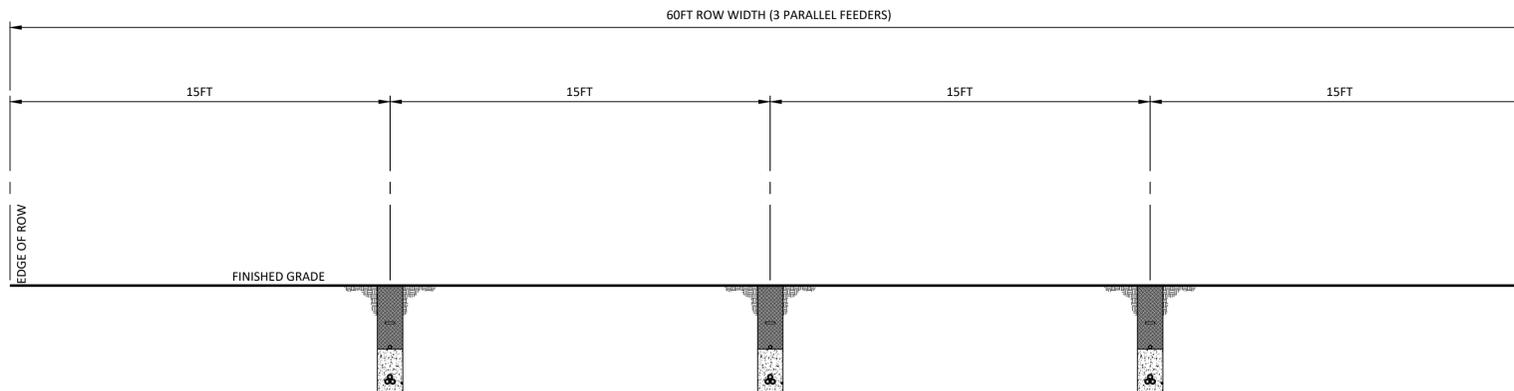
**G** TYPICAL SINGLE TRENCH

Not to Scale



**H** TYPICAL 2 PARALLEL TRENCH SEPARATION

Not to Scale



**I** TYPICAL 3 PARALLEL TRENCH SEPARATION

Not to Scale

NOTES

1. ALL EXISTING UTILITIES MUST BE LOCATED BEFORE ANY EXCAVATION/TRENCHING IS STARTED. REGARDLESS OF OTHER UTILITY CONTACTS, CONTRACTOR MUST NOTIFY LOCAL LOCATING CLEARING HOUSE (I.E. ONECALL) OR OTHER STATE BODY.
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4. IF THE GROUND WATER LEVEL IS ABOVE THE BOTTOM OF THE TRENCH THE CONTRACTOR AND OWNER SHALL DISCUSS AND AGREE UPON AN ALTERNATIVE CABLE INSTALLATION METHOD. IF THE GROUND WATER LEVEL IS BELOW THE BOTTOM OF THE TRENCH THE FOLLOWING REQUIREMENTS SHALL BE SATISFIED:
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  - 4.b. THE TOP SOIL MUST BE PUSHED TO ONE SIDE OF THE TRENCH ROUTE AND KEPT SEPARATE FROM BASE MATERIAL. THE STORED TOP SOIL IS TO BE SPREAD UNIFORMLY OVER THE AREA DISTURBED BY TRENCHING FOLLOWING BACKFILL AND COMPACTION.
  - 4.c. CONTRACTOR SHALL PROTECT ALL TRENCHES AND OTHER EXCAVATIONS FROM SURFACE WATER RUNOFF. ANY WATER THAT HAS ACCUMULATED IN THE EXCAVATION SHALL BE REMOVED AND ANY SOFT TRENCH BOTTOM REMOVED AND REPLACED PRIOR TO THE INSTALLATION OF THE CABLES. THIS INCLUDES REMOVAL AND REPLACEMENT OF SAND BACKFILL THAT HAS BECOME CONTAMINATED WITH SILT, ROCKS, MUD, CLAY, ETC. THE REMOVAL OF WATER AND CORRECTION OF SOFT GROUND CONDITIONS DUE TO SURFACE WATER WILL BE THE RESPONSIBILITY OF CONTRACTOR.
  - 4.d. CONTRACTOR MUST PROTECT THE PUBLIC AND LIVESTOCK FROM ALL TRENCHES AND EXCAVATIONS BY UTILIZING SUITABLE BARRICADES OR OTHER WARNING DEVICES.
  - 4.e. ALL TRENCHES SHALL BE EXCAVATED TO DEPTH AS NECESSARY TO MAINTAIN THE SPECIFIED COVER OVER THE INSTALLED CABLE. IF THE BOTTOM OF THE TRENCH CONTAINS ROCKS, WOOD, VEGETATION MATERIAL OR OTHER HARD, ROUGH, OR SHARP MATERIALS THAT COULD DAMAGE THE CABLE, THE TRENCH SHALL BE OVER-EXCAVATED AND BACKFILLED WITH A 4-INCH LAYER OF COMPACTED FINE CLEAN SOIL (NOTHING LARGER THAN WHAT WOULD PASS THROUGH A 3/8-INCH SCREEN) OR SAND PRIOR TO THE CABLE BEING LAID IN PLACE.
5. ALL DIRECT BURIED POWER CABLES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING:
  - 5.a. 34.5KV CABLES SHALL BE PLACED IN A TRIANGULAR CONFIGURATION, WITH NO INTENTIONAL SEPARATION, SECURED TOGETHER WITH CABLE TIES TO ENSURE THEY REMAIN IN THIS CONFIGURATION DURING AND AFTER INSTALLATION & BACK-FILL. PROPER TIE-WRAP TOOLS SHALL BE USED TO PREVENT OVER-TIGHTENING OF THE CABLE TIE.
  - 5.b. A 4/0 BARE COPPER WIRE SHALL RUN IN THE TRENCH WITH THE POWER CABLES. THERE SHALL BE A MINIMUM OF 4 INCHES OF SEPARATION BETWEEN THIS WIRE AND THE POWER CONDUCTORS PER WIND TURBINE GENERATOR MANUFACTURER'S REQUIREMENT OF THERE BEING INTENTIONAL SEPARATION.
  - 5.c. WHEN INSTALLED ABOVE THE POWER CABLES, THE INNERDUCT FOR FIBER OPTIC COMMUNICATION CABLE SHALL BE LAD ON TOP OF THE PADDING MATERIAL. WHEN INSTALLED AT THE SAME DEPTH AS THE POWER CABLE, THE INNERDUCT AND THE POWER CABLE SHALL BE SEPARATED BY A MINIMUM OF 4 INCHES.
  - 5.d. WHERE TWO OR MORE PARALLEL COMMUNICATION CABLES ARE REQUIRED IN TRENCH, LAY EACH INNERDUCT NEXT TO EACH OTHER WHILE STILL MAINTAINING CLEARANCES SHOWN.
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  - 6.b. THE FIRST 12-INCHES OF BACKFILL ABOVE THE CABLE (THIS IS THE CABLE PADDING) MUST BE FREE OF ROCKS, TOP SOIL, ROOTS, AND OTHER ORGANIC MATTER (NOTHING LARGER THAN WHAT WOULD PASS THROUGH A 3/8-INCH SCREEN). IF HEAVY STIFF CLAY IS ENCOUNTERED, THE NATIVE MATERIAL MUST BE EITHER MIXED WITH SANDY SOIL FROM OTHER STRATA IN THE SAME TRENCH, MIXED WITH FINE GRADE SAND THAT IS IMPORTED, OR REPLACED WITH IMPORTED MATERIAL.
  - 6.c. SELECT NATIVE SOIL CAN BE USED FOR THE REMAINDER OF THE TRENCH BACKFILL EXCEPT THAT LARGE CLUMPS AND ROCKS LARGER THAN 4-INCHES MUST BE EXCLUDED AND SUFFICIENT FINES PROVIDED TO ELIMINATE VOIDS.
  - 6.d. AT THE BEGINNING OF THE TRENCH BACKFILLING OPERATION, THE CONTRACTOR AND THE OWNER SHALL DETERMINE THE SUITABILITY OF THE NATIVE SOIL FOR USE AS BACKFILL, AND ANY ADDITIONAL MEASURES THAT MAY BE REQUIRED TO ENSURE ADEQUATE COMPACTION.
  - 6.e. THE CONTRACTOR SHALL FILL THE TRENCH TO PRE-CONSTRUCTION GRADE WITH THE STOCKPILED TOP SOIL AND WITH ADDITIONAL BACKFILL ADDED TO ALLOW FOR SETTLING. CONTRACTOR MAY SLIGHTLY OVERFILL TRENCH IN ORDER TO ALLOW FOR SETTLING.
7. CONTRACTOR SHALL PROVIDE AND INSTALL A PLASTIC WARNING TAPE IN ALL TRENCHES DURING BACKFILLING. THIS TAPE SHALL BE INSTALLED APPROXIMATELY 24-INCHES ABOVE THE CABLES. THE TAPE SHALL BE 6" WIDE, RED WITH BLACK LETTERS, MARKED "CAUTION - BURIED ELECTRIC LINES BELOW".
8. EXCAVATED SOIL AND ROCK THAT IS NOT REUSED IN BACKFILLING THE TRENCHES IS TO BE DISTRIBUTED ACROSS THE SITE PER THE DIRECTION OF THE OWNER.
9. ALL EXCAVATION, TRENCHING AND ELECTRICAL SYSTEM CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THE FORMAL STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE PROJECT.

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C	8/22/2018	JRR	Issued for Review	DH	SA
B	7/16/2018	BK	Issued for Review	MB	SA
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**M**  
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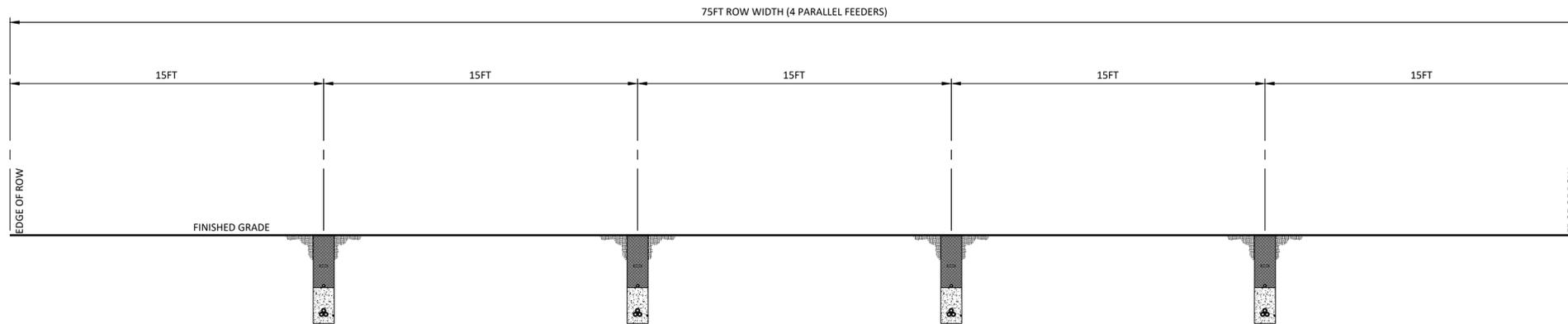
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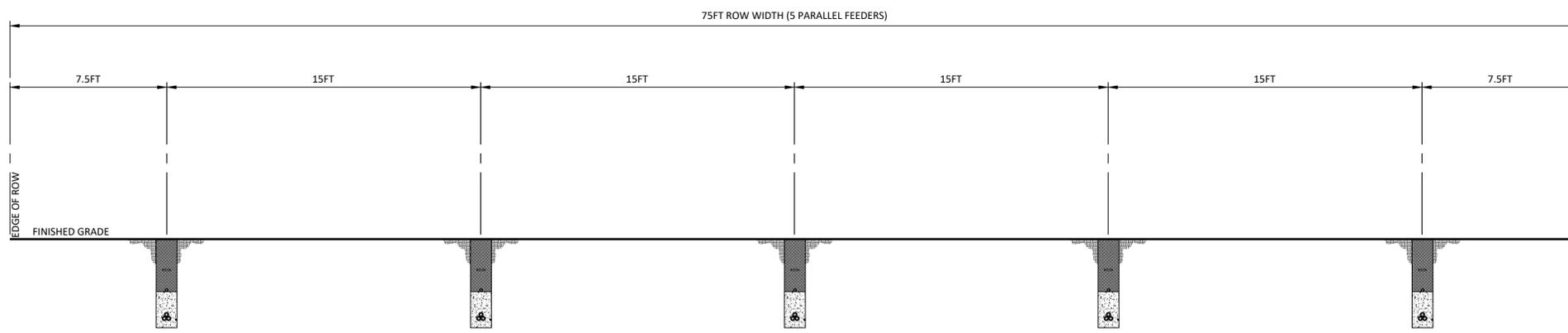
Title  
**BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
CABLE TRENCH DETAILS**

PRELIMINARY NOT FOR CONSTRUCTION REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	MB	Eng check	SA
	Drawn	MB	Approved	SA
	Dwg check	SA	Project Mngr	HM
	Scale at ANSI D	N.T.S.	Date	7/16/2018
			Rev	C
	Drawing Number	BLS-E-520-02		

CONCEPTUAL - NOT FOR CONSTRUCTION



**J** TYPICAL 4 PARALLEL TRENCH SEPARATION  
Not to Scale



**K** TYPICAL 5 PARALLEL TRENCH SEPARATION  
Not to Scale

**NOTES**

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  - 4.c. CONTRACTOR SHALL PROTECT ALL TRENCHES AND OTHER EXCAVATIONS FROM SURFACE WATER RUNOFF. ANY WATER THAT HAS ACCUMULATED IN THE EXCAVATION SHALL BE REMOVED AND ANY SOFT TRENCH BOTTOM REMOVED AND REPLACED PRIOR TO THE INSTALLATION OF THE CABLES. THIS INCLUDES REMOVAL AND REPLACEMENT OF SAND BACKFILL THAT HAS BECOME CONTAMINATED WITH SILT, ROCKS, MUD, CLAY, ETC. THE REMOVAL OF WATER AND CORRECTION OF SOFT GROUND CONDITIONS DUE TO SURFACE WATER WILL BE THE RESPONSIBILITY OF CONTRACTOR.
  - 4.d. CONTRACTOR MUST PROTECT THE PUBLIC AND LIVESTOCK FROM ALL TRENCHES AND EXCAVATIONS BY UTILIZING SUITABLE BARRICADES OR OTHER WARNING DEVICES.
  - 4.e. ALL TRENCHES SHALL BE EXCAVATED TO DEPTH AS NECESSARY TO MAINTAIN THE SPECIFIED COVER OVER THE INSTALLED CABLE. IF THE BOTTOM OF THE TRENCH CONTAINS ROCKS, WOOD, VEGETATION MATERIAL OR OTHER HARD, ROUGH, OR SHARP MATERIALS THAT COULD DAMAGE THE CABLE, THE TRENCH SHALL BE OVER-EXCAVATED AND BACKFILLED WITH A 4-INCH LAYER OF COMPACTED FINE CLEAN SOIL (NOTHING LARGER THAN WHAT WOULD PASS THROUGH A 3/8-INCH SCREEN) OR SAND PRIOR TO THE CABLE BEING LAID IN PLACE.
5. ALL DIRECT BURIED POWER CABLES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING:
  - 5.a. 34.5KV CABLES SHALL BE PLACED IN A TRIANGULAR CONFIGURATION, WITH NO INTENTIONAL SEPARATION, SECURED TOGETHER AS NEEDED WITH CABLE TIES TO ENSURE THEY REMAIN IN THIS CONFIGURATION DURING AND AFTER INSTALLATION & BACK-FILL. PROPER TIE-WRAP TOOLS SHALL BE USED TO PREVENT OVER-TIGHTENING OF THE CABLE TIE.
  - 5.b. A 4/0 BARE COPPER WIRE SHALL RUN IN THE TRENCH WITH THE POWER CABLES. THERE SHALL BE A MINIMUM OF 4 INCHES OF SEPARATION BETWEEN THIS WIRE AND THE POWER CONDUCTORS PER WIND TURBINE GENERATOR MANUFACTURER'S REQUIREMENT OF THERE BEING INTENTIONAL SEPARATION.
  - 5.c. WHEN INSTALLED ABOVE THE POWER CABLES, THE INNERDUCT FOR FIBER OPTIC COMMUNICATION CABLE SHALL BE LAID ON TOP OF THE PADDING MATERIAL. WHEN INSTALLED AT THE SAME DEPTH AS THE POWER CABLE, THE INNERDUCT AND THE POWER CABLE SHALL BE SEPARATED BY A MINIMUM OF 4 INCHES.
  - 5.d. WHERE TWO OR MORE PARALLEL COMMUNICATION CABLES ARE REQUIRED IN TRENCH, LAY EACH INNERDUCT NEXT TO EACH OTHER WHILE STILL MAINTAINING CLEARANCES SHOWN.
6. BACKFILL AND COMPACTION REQUIREMENTS ARE AS FOLLOWS:
  - 6.a. ALL EXCAVATED AREAS, INCLUDING TRENCHES AND BELL HOLES MUST BE THOROUGHLY COMPACTED TO NO LESS THAN 85% STANDARD PROCTOR OR 105% PCF, UNLESS OTHERWISE NOTED IN THE PROJECT GEO-TECHNICAL REPORT. COMPACTION SHALL BE BY PROVEN METHODOLOGY. SPECIAL CARE MUST BE TAKEN IN THE AREAS WHERE THE THERMAL TESTING OF SOILS IN THAT AREA INDICATES A POTENTIALLY HIGH RESISTIVITY. COMPACTION BY FLOODING WILL NOT BE PERMITTED.
  - 6.b. THE FIRST 12-INCHES OF BACKFILL ABOVE THE CABLE (THIS IS THE CABLE PADDING) MUST BE FREE OF ROCKS, TOP SOIL, ROOTS, AND OTHER ORGANIC MATTER (NOTHING LARGER THAN WHAT WOULD PASS THROUGH A 3/8-INCH SCREEN). IF HEAVY STIFF CLAY IS ENCOUNTERED, THE NATIVE MATERIAL MUST BE EITHER MIXED WITH SANDY SOIL FROM OTHER STRATA IN THE SAME TRENCH, MIXED WITH FINE GRADE SAND THAT IS IMPORTED, OR REPLACED WITH IMPORTED MATERIAL.
  - 6.c. SELECT NATIVE SOIL CAN BE USED FOR THE REMAINDER OF THE TRENCH BACKFILL EXCEPT THAT LARGE CLUMPS AND ROCKS LARGER THAN 4-INCHES MUST BE EXCLUDED AND SUFFICIENT FINES PROVIDED TO ELIMINATE VOIDS.
  - 6.d. AT THE BEGINNING OF THE TRENCH BACKFILLING OPERATION, THE CONTRACTOR AND THE OWNER SHALL DETERMINE THE SUITABILITY OF THE NATIVE SOIL FOR USE AS BACKFILL, AND ANY ADDITIONAL MEASURES THAT MAY BE REQUIRED TO ENSURE ADEQUATE COMPACTION.
  - 6.e. THE CONTRACTOR SHALL FILL THE TRENCH TO PRE-CONSTRUCTION GRADE WITH THE STOCKPILED TOP SOIL AND WITH ADDITIONAL BACKFILL ADDED TO ALLOW FOR SETTLING. CONTRACTOR MAY SLIGHTLY OVERFILL TRENCH IN ORDER TO ALLOW FOR SETTLING.
  - 6.f. CONTRACTOR SHALL PROVIDE AND INSTALL A PLASTIC WARNING TAPE IN ALL TRENCHES DURING BACKFILLING. THIS TAPE SHALL BE INSTALLED APPROXIMATELY 24-INCHES ABOVE THE CABLES. THE TAPE SHALL BE 6" WIDE, RED WITH BLACK LETTERS, MARKED "CAUTION - BURIED ELECTRIC LINES BELOW".
8. EXCAVATED SOIL AND ROCK THAT IS NOT REUSED IN BACKFILLING THE TRENCHES IS TO BE DISTRIBUTED ACROSS THE SITE PER THE DIRECTION OF THE OWNER.
9. ALL EXCAVATION, TRENCHING AND ELECTRICAL SYSTEM CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THE FORMAL STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE PROJECT.

Rev	Date	Drawn	Description	Ch'k'd	App'd
C	8/22/2018	JRR	Issued for Review	DH	SA
B	8/17/2018	BK	Issued for Review	MB	SA
A	7/16/2018	BK	Issued for Review	MB	SA

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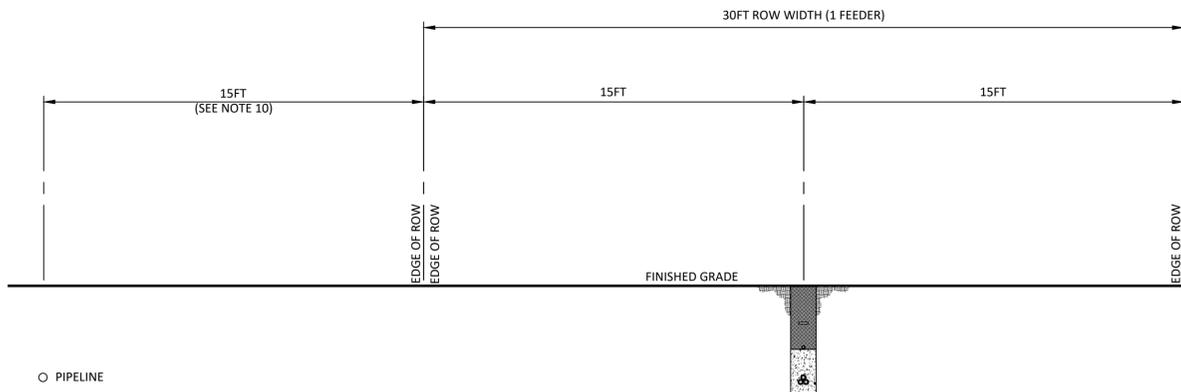
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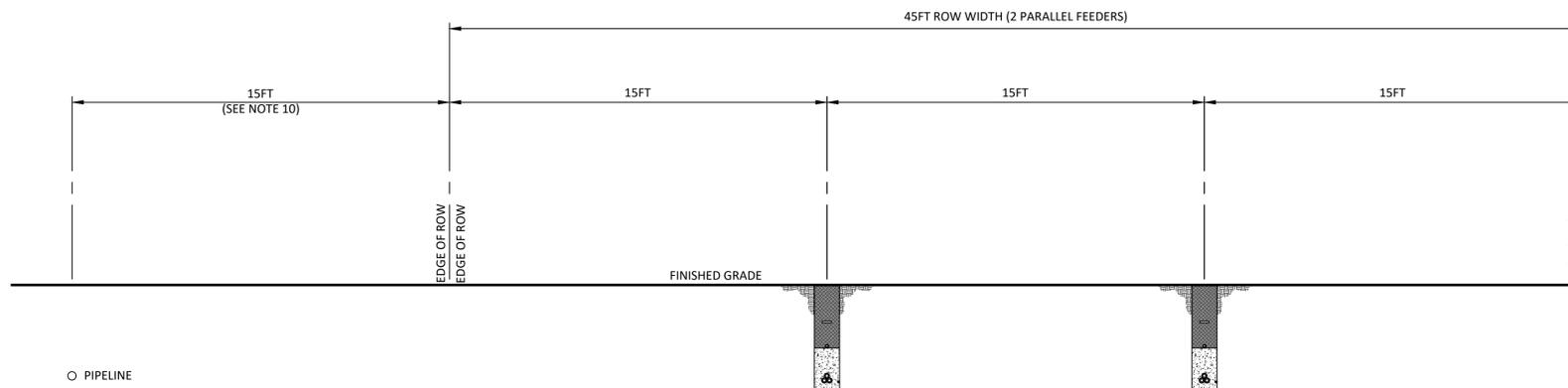
Title  
**BLUESTONE WIND FARM**  
**UNDERGROUND COLLECTION**  
**CABLE TRENCH DETAILS**

PRELIMINARY NOT FOR CONSTRUCTION REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	BK	Eng check	MB
	Drawn	BK	Approved	SA
	Dwg check	MB	Project Mngr	HM
	Scale at ANS I D	N.T.S.	Date	8/17/2018
			Rev	C
Drawing Number	BLS-E-520-03			

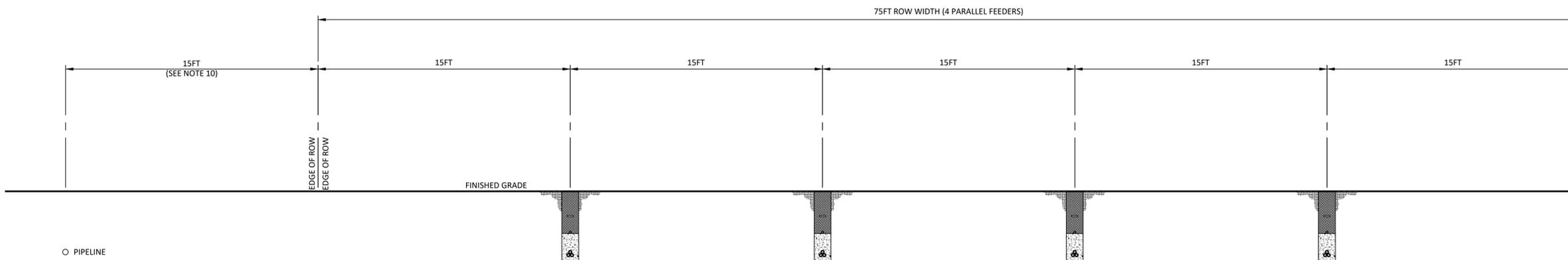
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**G-13** SINGLE TRENCH PARALLEL PIPELINE SEPARATION  
Not to Scale



**H-2** 2 TRENCH PARALLEL PIPELINE SEPARATION  
Not to Scale



**J-3** 4 TRENCH PARALLEL PIPELINE SEPARATION  
Not to Scale

**NOTES**

1. ALL EXISTING UTILITIES MUST BE LOCATED BEFORE ANY EXCAVATION/TRENCHING IS STARTED. REGARDLESS OF OTHER UTILITY CONTACTS, CONTRACTOR MUST NOTIFY LOCAL LOCATING CLEARING HOUSE (I.E. ONECALL) OR OTHER STATE BODY.
2. ALL GRADE SURFACES THAT ARE DISTURBED SHALL BE RESTORED TO ESSENTIALLY ORIGINAL CONDITION AND TO THE SATISFACTION OF THE OWNER.
3. THE CABLE ROUTE TO BE FOLLOWED BY CONTRACTOR SHALL BE AS STAKED BY THE CONTRACTOR. ALL TRENCHES SHALL FOLLOW AS STRAIGHT A LINE AS PRACTICABLE. ANY DEVIATION FROM THE ROUTING PROVIDED SHALL BE DISCUSSED WITH AND APPROVED BY THE OWNER PRIOR TO CONSTRUCTION. ROCK MAY BE REMOVED BY ANY MEANS CONTRACTOR PREFERENCES, EXCEPT BLASTING. BLASTING WILL NOT BE PERMITTED UNLESS SPECIFICALLY AUTHORIZED BY OWNER.
4. IF THE GROUND WATER LEVEL IS ABOVE THE BOTTOM OF THE TRENCH THE CONTRACTOR AND OWNER SHALL DISCUSS AND AGREE UPON AN ALTERNATIVE CABLE INSTALLATION METHOD. IF THE GROUND WATER LEVEL IS BELOW THE BOTTOM OF THE TRENCH THE FOLLOWING REQUIREMENTS SHALL BE SATISFIED:
  - 4.a. EVERY TRENCH MUST BE A MINIMUM OF 12-INCHES WIDE (WITH PROPER SLOPE FOR WEAK SOILS), AND MUST PROVIDE SUFFICIENT SPACE TO ALLOW COMPACTION AS SPECIFIED WITH THE EQUIPMENT BEING UTILIZED. THE CONTRACTOR SHALL ENSURE THAT SUFFICIENT AMOUNT OF FINE SOIL IS ADDED ABOVE CABLE FOR BACKFILLS.
  - 4.b. THE TOP SOIL MUST BE PUSHED TO ONE SIDE OF THE TRENCH ROUTE AND KEPT SEPARATE FROM BASE MATERIAL. THE STORED TOP SOIL IS TO BE SPREAD UNIFORMLY OVER THE AREA DISTURBED BY TRENCHING FOLLOWING BACKFILL AND COMPACTION.
  - 4.c. CONTRACTOR SHALL PROTECT ALL TRENCHES AND OTHER EXCAVATIONS FROM SURFACE WATER RUNOFF. ANY WATER THAT HAS ACCUMULATED IN THE EXCAVATION SHALL BE REMOVED AND ANY SOFT TRENCH BOTTOM REMOVED AND REPLACED PRIOR TO THE INSTALLATION OF THE CABLES. THIS INCLUDES REMOVAL AND REPLACEMENT OF SAND BACKFILL THAT HAS BECOME CONTAMINATED WITH SILT, ROCKS, MUD, CLAY, ETC. THE REMOVAL OF WATER AND CORRECTION OF SOFT GROUND CONDITIONS DUE TO SURFACE WATER WILL BE THE RESPONSIBILITY OF CONTRACTOR.
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5. ALL DIRECT BURIED POWER CABLES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING:
  - 5.a. 34.5KV CABLES SHALL BE PLACED IN A TRIANGULAR CONFIGURATION, WITH NO INTENTIONAL SEPARATION, SECURED TOGETHER AS NEEDED WITH CABLE TIES TO ENSURE THEY REMAIN IN THIS CONFIGURATION DURING AND AFTER INSTALLATION & BACK-FILL. PROPER TIE-WRAP TOOLS SHALL BE USED TO PREVENT OVER-TIGHTENING OF THE CABLE TIE.
  - 5.b. A 4/0 BARE COPPER WIRE SHALL RUN IN THE TRENCH WITH THE POWER CABLES. THERE SHALL BE A MINIMUM OF 4 INCHES OF SEPARATION BETWEEN THIS WIRE AND THE POWER CONDUCTORS PER WIND TURBINE GENERATOR MANUFACTURER'S REQUIREMENT OF THERE BEING INTENTIONAL SEPARATION.
  - 5.c. WHEN INSTALLED ABOVE THE POWER CABLES, THE INNERDUCT FOR FIBER OPTIC COMMUNICATION CABLE SHALL BE LAID ON TOP OF THE PADDING MATERIAL. WHEN INSTALLED AT THE SAME DEPTH AS THE POWER CABLE, THE INNERDUCT AND THE POWER CABLE SHALL BE SEPARATED BY A MINIMUM OF 4 INCHES.
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  - 6.b. THE FIRST 12-INCHES OF BACKFILL ABOVE THE CABLE (THIS IS THE CABLE PADDING) MUST BE FREE OF ROCKS, TOP SOIL, ROOTS, AND OTHER ORGANIC MATTER (NOTHING LARGER THAN WHAT WOULD PASS THROUGH A 3/8-INCH SCREEN). IF HEAVY STIFF CLAY IS ENCOUNTERED, THE NATIVE MATERIAL MUST BE EITHER MIXED WITH SANDY SOIL FROM OTHER STRATA IN THE SAME TRENCH, MIXED WITH FINE GRADE SAND THAT IS IMPORTED, OR REPLACED WITH IMPORTED MATERIAL.
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7. CONTRACTOR SHALL PROVIDE AND INSTALL A PLASTIC WARNING TAPE IN ALL TRENCHES DURING BACKFILLING. THIS TAPE SHALL BE INSTALLED APPROXIMATELY 24-INCHES ABOVE THE CABLES. THE TAPE SHALL BE 6" WIDE, RED WITH BLACK LETTERS, MARKED "CAUTION - BURIED ELECTRIC LINES BELOW".
8. EXCAVATED SOIL AND ROCK THAT IS NOT REUSED IN BACKFILLING THE TRENCHES IS TO BE DISTRIBUTED ACROSS THE SITE PER THE DIRECTION OF THE OWNER.
9. ALL EXCAVATION, TRENCHING AND ELECTRICAL SYSTEM CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THE FORMAL STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE PROJECT.
10. ESTIMATED DISTANCE FROM PIPELINE TO EDGE OF RIGHT-OF-WAY BASED ON AVAILABLE PUBLIC SOURCE DATA.

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	8/22/2018	JRR	Issued for Review	DH	SA
A	8/17/2018	BK	Issued for Review	MB	SA

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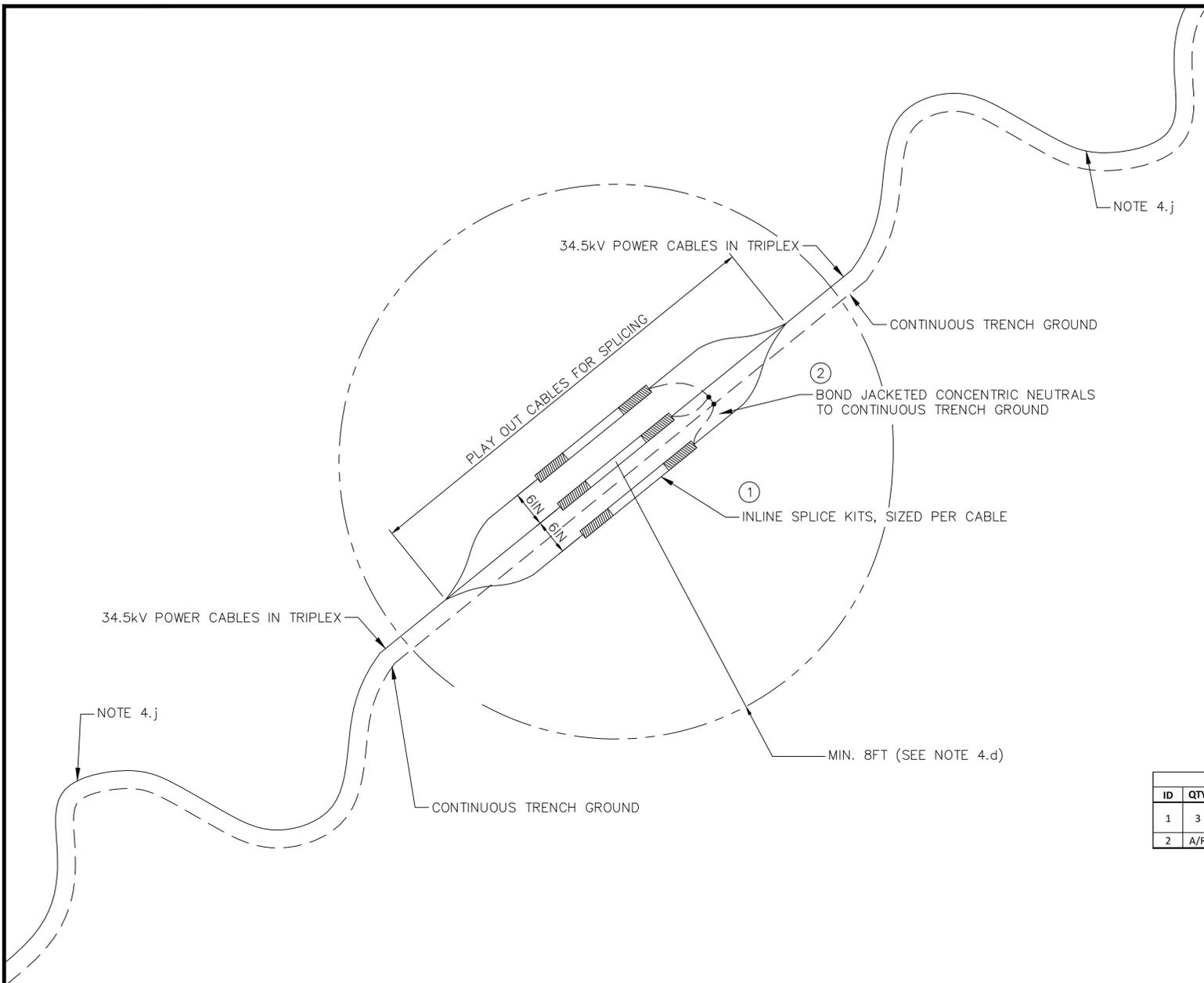
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Title  
**BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
CABLE TRENCH DETAILS**

PRELIMINARY NOT FOR CONSTRUCTION REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	BK	Eng check	MB
	Drawn	BK	Approved	SA
	Dwg check	MB	Project Mngr	HM
	Scale at ANSI D	N.T.S.	Date	8/17/2018
			Rev	B
	Drawing Number	BLS-E-520-04		

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LIST OF MATERIALS FOR IN-LINE CABLE SPLICE					
ID	QTY	Unit	Description	Manufacturer	Part No
1	3	EA	Inline Cold-Applied Splice Kit, Aluminum shearbolt Connector 35kV, 150kV BIL, Watertight	3M (or equal)	-
2	A/R	EA	Copper compression crimp, 4/0str to 2/0str	Burdny (or equal)	-

- NOTES
- IN GENERAL, ALL CABLE SPLICING IS PREFERRED TO BE IN ABOVE GROUND SPLICE BOXES. HOWEVER, ON LONG HOME-RUNS, UNDERGROUND SPLICES ARE ALLOWED AS DESCRIBED ON THIS DETAIL. ALSO, IN ORDER TO USE PARTIAL REELS OF 4/0AWG CABLE, UNDERGROUND SPLICES MAY BE INSTALLED BETWEEN THE LAST TWO TURBINES IN A STRING AND MARKED ON THE AS-BUILT DRAWINGS.
  - UNDERGROUND POWER CABLE SPLICES ARE ONLY PERMITTED IN HOME RUNS WHERE THE CABLE RUN EXCEEDS MANUFACTURER'S REEL LENGTH. IN NO CASE MAY UNDERGROUND RUNS EXCEED TWO (2) REEL LENGTHS OR A MAXIMUM DISTANCE OF 7000-FEET BEFORE CABLE IS SPLICED IN AN ABOVE-GROUND SPLICE BOX. THE CONTRACTOR SHALL FURNISH AND INSTALL ABOVE-GROUND DEAD-FRONT JUNCTION BOXES (SEE MTW-E-522-01) FOR SPLICING THE MV CABLE WHEN REQUIRED.
  - UNDERGROUND SPLICES MAY ALSO BE INSTALLED WHEN THE UNDERGROUND COLLECTOR SYSTEM IS INSTALLED IN CONDUIT VIA DIRECTIONAL BORING (SEE MTW-E-522-01).
  - WHEN REQUIRED AND ALLOWED AS DESCRIBED ABOVE, THE CONTRACTOR SHALL INSTALL DIRECT BURIED IN-LINE SPLICES AS FOLLOWS:
    - WHERE CABLES ARE TO BE SPLICED AN AREA OF SUFFICIENT SIZE MUST BE EXCAVATED TO PROVIDE ENVIRONMENTAL CONTROLS AS NEEDED.
    - ALL 3 PHASES SHALL BE SPLICED AT THE SAME LOCATION.
    - AFTER CABLE IS OUT, A WATER-TIGHT PROTECTIVE SEAL MUST BE APPLIED TO EXPOSED ENDS TO PREVENT DIRT AND MOISTURE FROM ENTERING THE CABLE.
    - A PLASTIC TARP SHALL BE PLACED UNDER THE CABLE COVERING AN AREA OF AT LEAST 8 FEET IN DIAMETER MEASURED FROM THE SPLICING LOCATION.
    - A PROTECTIVE TENT MUST BE ERECTED AROUND THE SPLICING LOCATION. THE PROTECTIVE TENT SHALL BE LARGE ENOUGH TO COMPLETELY COVER THE TARPED AREA UNDER AND AROUND THE SPLICE LOCATION. THE PROTECTIVE TENT SHALL HAVE ADEQUATE SEALS TO ALLOW NO DUST OR PRECIPITATION TO BLOW INTO THE SPLICING AREA.
    - IF THE TEMPERATURE AT THE SPLICING LOCATION IS BELOW 40°F A HEAT SOURCE SHALL BE LOCATED AT THE SPLICING LOCATION TO HEAT THE PROTECTIVE TENT TO 45°F OR MORE.
    - THE SPLICE SHALL BE INSTALLED PER MANUFACTURER INSTRUCTIONS AND TRAINING USING APPROVED COLDSHRINK MATERIALS. ALL PERSONNEL INSTALLING SPLICES SHALL HAVE COMPLETED MANUFACTURER TRAINING FOR THE SPECIFIC SPLICES TO BE INSTALLED WITHIN 6-MONTHS PRIOR TO INSTALLING THE SPLICE. CERTIFICATION DOCUMENTATION FOR EACH PERSON INSTALLING SPLICES SHALL BE MADE AVAILABLE TO THE OWNER.
    - THE CONTRACTOR IS RESPONSIBLE FOR REPLACING TERMINATIONS, CABLE OR SPLICES THAT DO NOT PASS QUALITY CONTROL TESTING OR MEET IEEE STANDARDS.
  - SPLICING OF TWO DIFFERENT SIZES OF CABLE IS FORBIDDEN.
  - THE CONTRACTOR SHALL INSTALL A MINIMUM OF 12 FEET OF EXCESS CABLE, PER END, AT EACH SPLICE LOCATION FOR POSSIBLE FUTURE REPAIR AND RE-TERMINATION. THE CONTRACTOR SHALL LAY THIS EXCESS SLACK IN "S" CURVES WITHIN THE EXCAVATED AREA AND THEN BACKFILL ALL EXCAVATION TO THE SAME SPECS AS TRENCH BACKFILL NOTED ON SHEET 1.
  - A SPLICE LOCATOR BALL SHALL BE BURIED DIRECTLY OVER EVERY SPLICE LOCATION. THE SPLICE LOCATORS MUST BE DESIGNED TO BE LOCATED USING ELECTRONIC EQUIPMENT. GPS COORDINATES SHALL BE RECORDED AND DOCUMENTED AT EACH SPLICE LOCATION. THE LOCATION SHALL BE MARKED ON THE AS BUILT DRAWINGS WITH COORDINATES.
- REGARDING BACKFILL OF EXCAVATED AREAS:
- THE FIRST 12 INCHES OF BACKFILL ABOVE THE CABLE SHALL BE SELECT NATIVE MATERIAL WITH NO ROCKS, ROOTS, OR OTHER MATERIAL LARGER THAN WOULD PASS THROUGH A 3/8-INCH SCREEN AND SHOULD HAVE SUFFICIENT FINES TO ELIMINATE ANY VOIDS IN THE BACKFILL.
  - THE REMAINING BACKFILL ABOVE THE FIRST 12-INCHES OF COVER SHALL BE SELECT NATIVE MATERIALS WITH NO ROCKS, ROOTS, OR OTHER MATERIAL LARGER THAN 4-INCHES AND SHALL HAVE SUFFICIENT FINES TO ELIMINATE ANY VOIDS IN THE BACKFILL PROCESS.
  - ALL EXCAVATED AREAS ARE TO BE BACKFILLED BACK TO PRE-CONSTRUCTION GRADE WITH WITH SELECT NATIVE MATERIALS AND TOPSOIL AND COMPACTED TO 85% OF MAXIMUM DENSITY OR 105 PCF.
- EFFECTIVELY GROUND THE JACKETED CONCENTRIC NEUTRALS WHEREVER THE CN'S ARE EXPOSED TO CONTACT BY PERSONNEL. THIS INCLUDES ALL CABLE TERMINATION, JUNCTION, AND SPLICE LOCATIONS.

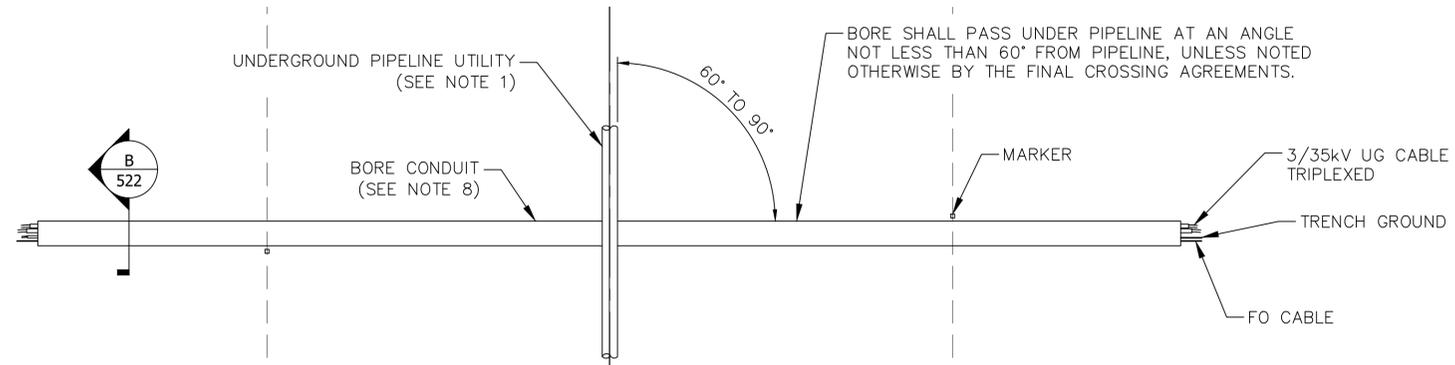
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A	5/04/2018	MB	Issued for Review	SA	SA

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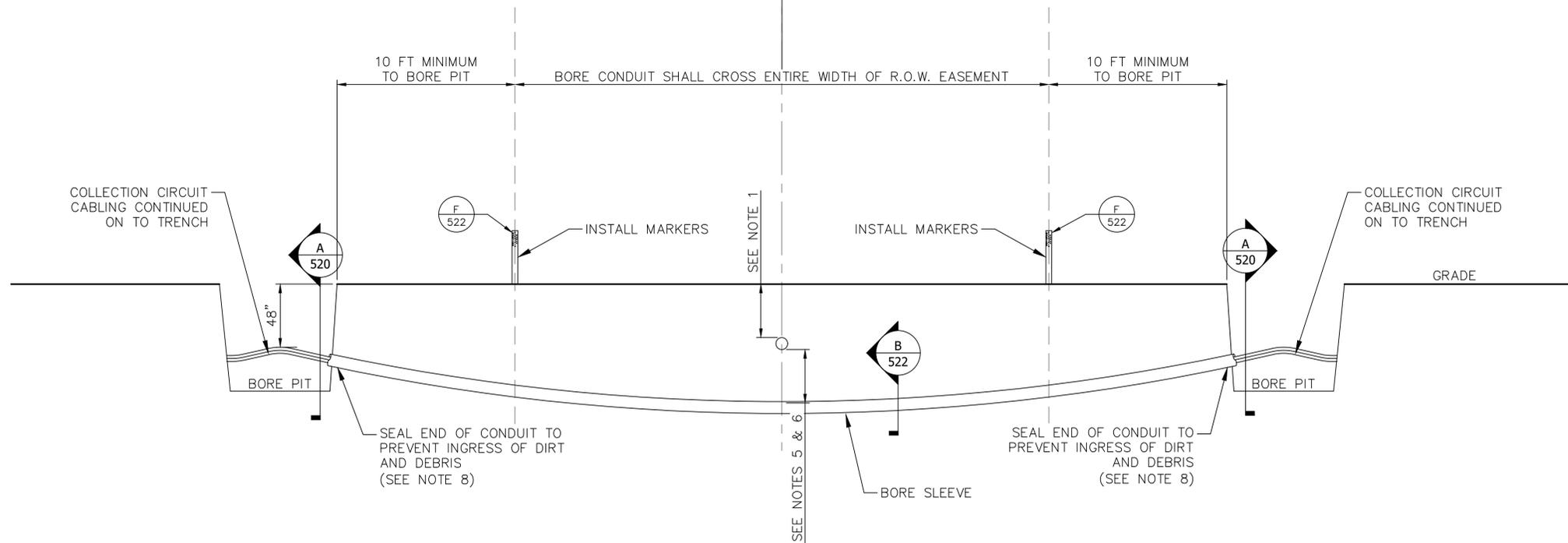
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	Dwg check	SA	Project Mngr	HM	
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			Rev	B	
Drawing Number		BLS-E-521-01			

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**C** FEEDER PIPELINE CROSSING - PLAN VIEW  
Not to Scale



**D** FEEDER PIPELINE CROSSING - PROFILE VIEW  
Not to Scale

NOTES

1. PRIOR TO EXCAVATION, CONTRACTOR SHALL CONTACT LOCAL ONE CALL UTILITY LOCATING SERVICES TO VERIFY DEPTH AND LOCATION OF ALL UTILITIES AT THE CROSSING LOCATION.
2. ALL PIPELINE CROSSINGS SHALL COMPLY WITH SPECIFIC AGREEMENTS AND PERMITS WITH PIPELINE OWNER/OPERATOR. IN THE CASE THAT THIS DOCUMENT CONFLICTS WITH THESE SPECIFIC AGREEMENTS AND/OR PERMITS, THE CONTRACTOR SHALL COMPLY WITH THE AGREEMENTS/PERMITS AND NOTIFY THE OWNER OF THE CONFLICT.
3. PERMANENT ABOVE GRADE ROUTE MARKERS SHALL BE INSTALLED AND MAINTAINED AT THE LIMITS OF THE PIPELINE EASEMENT UNLESS THE CROSSING IS IN A CULTIVATED FIELD. IF CROSSING IS IN A CULTIVATED FIELD, THEN UNDERGROUND EXTENDED-RANGE MARKER BALLS SHALL BE INSTALLED.
4. EACH INSTALLED CROSSING SHALL BE ENCASED THROUGHOUT THE WIDTH OF THE PIPELINE UTILITY EASEMENT.
5. CONTRACTOR SHALL MAINTAIN A SEPARATION OF NOT LESS THAN 12 INCHES WHEN PARALLELING GAS, WATER, OIL, OR OTHER PIPELINE SYSTEMS AND NOT LESS THAN 6 INCHES WHEN CROSSING THESE PIPELINE SYSTEMS BETWEEN THE BOTTOM OF THE PIPELINE SYSTEM AND THE TOP OF THE COLLECTION SYSTEM INSTALLATION CONDUIT, UNLESS OTHERWISE SPECIFICALLY AGREED UPON AND NOTED BY OWNER AND THE PIPELINE UTILITY PRIOR TO CONSTRUCTION.
6. COLLECTION SYSTEM CABLES SHALL BE SEPARATED FROM GAS TRANSMISSION LINES BY A CLEARANCE OF NOT LESS THAN 12 INCHES. IF THIS CLEARANCE CANNOT BE ATTAINED, THE GAS TRANSMISSION LINE SHALL BE PROTECTED FROM DAMAGE THAT MIGHT RESULT FROM THE PROXIMITY OF THE COLLECTION SYSTEM CABLES.
7. A THREE PHASE SPLICE CAN BE INSTALLED ON EITHER SIDE OF THE CROSSING FOR PULLING THROUGH THE CONDUIT. ALL SPLICES TO BE APPROVED BY THE OWNER PRIOR TO INSTALLATION.
8. COATED STEEL PIPE OR CONCRETE ENCASED HDPE PIPE CAN BE USED IN PLACE OF CONDUIT.

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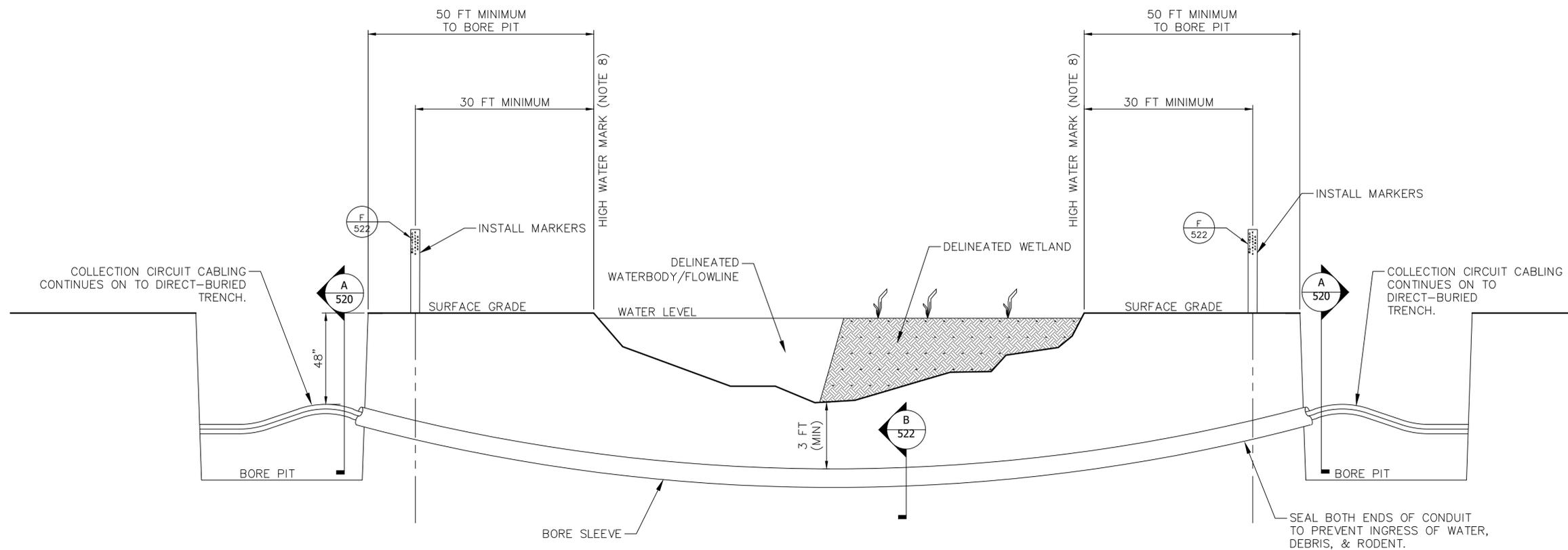
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Title  
**BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
PIPELINE CROSSING DETAILS**

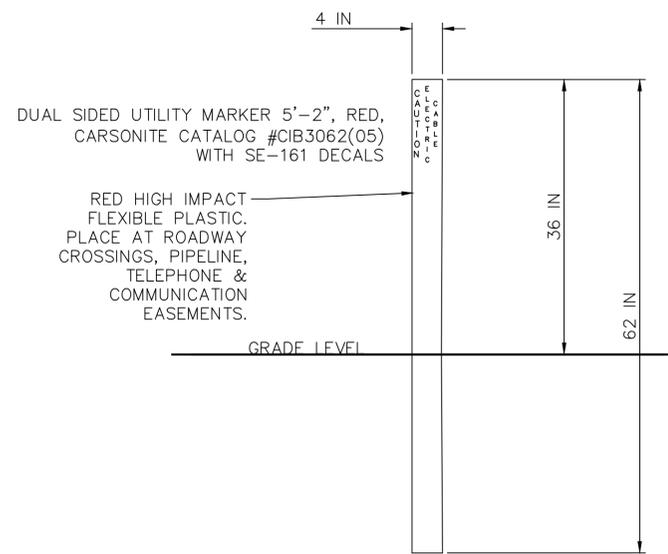
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Drawing Number	BLS-E-522-02		

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**E** STREAMS AND WETLANDS HDB CROSSING - SECTION VIEW  
Not to Scale



**F** UTILITY MARKERS  
Not to Scale

**UTILITY MARKER NOTES**

- UTILITY MARKERS SHALL BE PLACED ON EACH SIDE OF ROADWAY CROSSINGS, PIPELINE CROSSINGS, TELEPHONE AND COMMUNICATION EASEMENTS.
- IN THE CASE OF FARMED FIELDS, UNDERGROUND MARKERS/LOCATORS SHALL BE INSTALLED IN LIEU OF UTILITY MARKERS.
- FOR A CONTINUOUS TRENCH IN AN EASEMENT FOR A DISTANCE OF GREATER THAN 1000 FEET, AN UNDERGROUND CABLE LOCATOR WITH GPS COORDINATES SHALL BE INSTALLED.
- UTILITY MARKERS SHALL BE EMBEDDED A MINIMUM OF 18".

**NOTES**

- CONTRACTOR SHALL CONTACT LOCAL DEPARTMENT OF NATURAL RESOURCES PRIOR TO EXCAVATION TO CONFIRM WHICH STREAMS AND WETLAND CROSSINGS THROUGHOUT THE PROJECT SITE WILL REQUIRE ANY SPECIAL PROCEDURES OR RESTRICTIONS ABOVE WHAT IS DESCRIBED ON THIS DRAWING.
- IF INTERMITTENT STREAMS ARE FLOWING AT THE TIME THE PROJECT COMMENCES, WORK IN AND AROUND INTERMITTENT STREAMS SHALL BE RESTRICTED UNTIL SURFACE WATERS ARE NOT LONGER FLOWING.
- ALL CROSSINGS OF STREAMS AND WETLANDS SHALL COMPLY WITH THE PROJECT SWMP PLAN AND ANY SPECIFIC AGREEMENTS OR PERMITS BY JURISDICTIONAL AUTHORITY. IN THE CASE THAT THIS DOCUMENT CONFLICTS WITH THESE SPECIFIC AGREEMENTS AND/OR PERMITS, THE CONTRACTOR SHALL COMPLY WITH THE AGREEMENTS/PERMITS AND NOTIFY THE OWNER OF THE CONFLICT.
- CONTRACTOR MAY INSTALL UNDERGROUND COLLECTOR SYSTEM CABLES VIA TRENCH WHEN CROSSING EPHEMERAL STREAM BEDS IF THE JURISDICTIONAL AUTHORITY WILL ALLOW IT.
- CONTRACTOR SHALL INSTALL UNDERGROUND COLLECTOR SYSTEM CABLES VIA HORIZONTAL DIRECTIONAL BORING WHEN CROSSING PERENNIAL OR INTERMITTENT STREAMS.
- ALL PRACTICABLE EROSION CONTROL DEVICES SHALL BE INSTALLED AND MAINTAINED IN GOOD WORKING ORDER THROUGHOUT CONSTRUCTION TO PREVENT THE UNAUTHORIZED DISCHARGE OF MATERIAL INTO A WETLAND OR TRIBUTARY. THE DEVICES SHALL BE INSTALLED TO MAXIMIZE THEIR EFFECTIVENESS, E.G. SEDIMENT FENCES SHALL GENERALLY BE BURIED OR SIMILARLY SECURED. THESE CONTROLS SHALL BE MAINTAINED UNTIL PERMANENT EROSION CONTROLS ARE IN PLACE. PRACTICABLE EROSION CONTROL MEASURES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
  - FILL IS PLACED IN A MANNER THAT AVOIDS DISTURBANCE TO THE MAXIMUM PRACTICABLE EXTENT (E.G. PLACING FILL WITH A MACHINE RATHER THAN END-DUMPING FROM A TRUCK).
  - PREVENT ALL CONSTRUCTION MATERIALS AND DEBRIS FROM ENTERING WATERWAY.
  - USE FILTER BAGS, SEDIMENT FENCES, SEDIMENT TRAPS OR CATCH BASINS, SILT CURTAINS, LEAVE STRIPS OR BERMS, JERSEY BARRIERS, SAND BAGS, OR OTHER MEASURES SUFFICIENT TO PREVENT MOVEMENT OF SOIL.
  - USE IMPERVIOUS MATERIALS TO COVER STOCKPILES WHEN UNATTENDED OR DURING RAIN EVENT.
  - NO HEAVY MACHINERY IN A WETLAND OR OTHER WATERWAY.
  - USE A GRAVEL STAGING AREA AND CONSTRUCTION ACCESS.
  - FENCE OFF PLANTED AREAS TO PROTECT FROM DISTURBANCE AND/OR EROSION.
  - FLAT OR FENCE OFF WETLANDS ADJACENT TO THE CONSTRUCTION AREA.
- ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED DAILY TO ENSURE THEIR CONTINUED EFFECTIVENESS.
- THE HIGH WATER MARK FOR ALL STREAMS AND WETLANDS SHALL BE DETERMINED BY THE GOVERNING AUTHORITY.
- PERMANENT ABOVE GRADE UTILITY MARKERS SHALL BE INSTALLED AND MAINTAINED AT A MINIMUM OF 40 FEET FROM HIGH WATER MARK AT POINT OF CROSSING.
- EACH UNDERGROUND CROSSING SHALL BE ENCASED THROUGHOUT THE ENTIRE WIDTH OF STREAM OR WETLAND TO AT LEAST 30 FEET BEYOND HIGH WATER MARK AT THE POINT OF CROSSING.
- A THREE PHASE SPLICE CAN BE INSTALLED ON EITHER SIDE OF THE CROSSING FOR PULLING THROUGH THE CONDUIT. ALL SPLICES TO BE APPROVED BY THE OWNER PRIOR TO INSTALLATION.

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	8/22/2018	JRR	Issued for Review	DH	SA
A	5/04/2018	MB	Issued for Review	SA	SA

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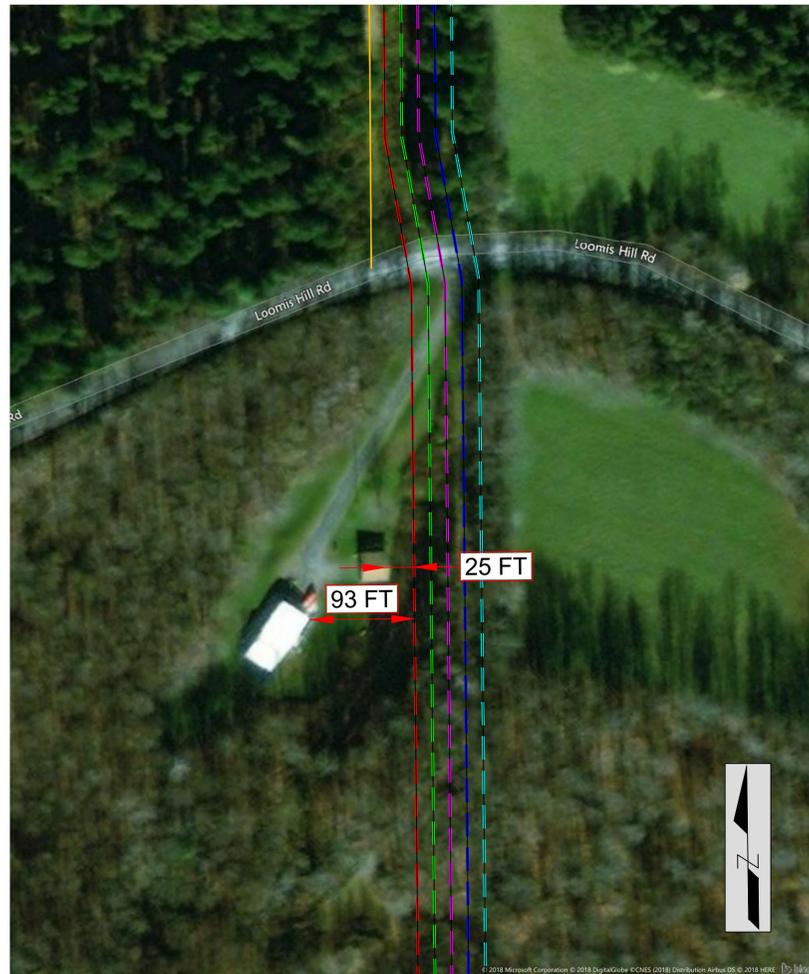
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Client

Title  
**BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
WETLAND/WATERWAY CROSSING  
DETAILS**

PRELIMINARY NOT FOR CONSTRUCTION REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	MB	Eng check	SA
	Drawn	MB	Approved	SA
	Dwg check	KS	Project Mngr	HM
	Scale at ANSI D	N.T.S.	Date	5/04/2018
			Rev	B
Drawing Number		BLS-E-522-03		

**CONCEPTUAL - NOT FOR CONSTRUCTION**



**LEGEND**

- ACCESS ROAD
- CIRCUIT 1
- CIRCUIT 2
- CIRCUIT 3
- CIRCUIT 4
- CIRCUIT 5
- EXISTING TRANSMISSION LINE

WIND TURBINE GENERATOR (WTG)

**NOTES**

- ALL INFORMATION SHOWN IS CONCEPTUAL IN NATURE.
- LAYOUT IS BASED ON VESTAS V150-4.2 TURBINES WHICH HAVE A 4.2MW OUTPUT EACH.

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	8/22/2018	JRR	ISSUED FOR REVIEW	DH	SA
A	7/13/2018	BK	ISSUE TO CLIENT	MB	SA

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Client

Title **BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
RESIDENTIAL CLEARANCES**

<b>PRELIMINARY NOT FOR CONSTRUCTION</b> REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	BK	Eng check	SA
	Drawn	BK	Approved	SA
	Dwg check	MB	Project Mngr	HM
	Scale at ANSI D	N.T.S.	Date	7/13/2018
			Rev	<b>B</b>
Drawing Number		<b>BLS-E-550-01</b>		

**CONCEPTUAL - NOT FOR CONSTRUCTION**



LEGEND

	ACCESS ROAD
	CIRCUIT 1
	CIRCUIT 2
	CIRCUIT 3
	CIRCUIT 4
	CIRCUIT 5
	EXISTING TRANSMISSION LINE
	WIND TURBINE GENERATOR (WTG)

NOTES

- ALL INFORMATION SHOWN IS CONCEPTUAL IN NATURE.
- LAYOUT IS BASED ON VESTAS V150-4.2 TURBINES WHICH HAVE A 4.2MW OUTPUT EACH.

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	8/22/2018	JRR	ISSUED FOR REVIEW	DH	SA
A	7/13/2018	BK	ISSUE TO CLIENT	MB	SA

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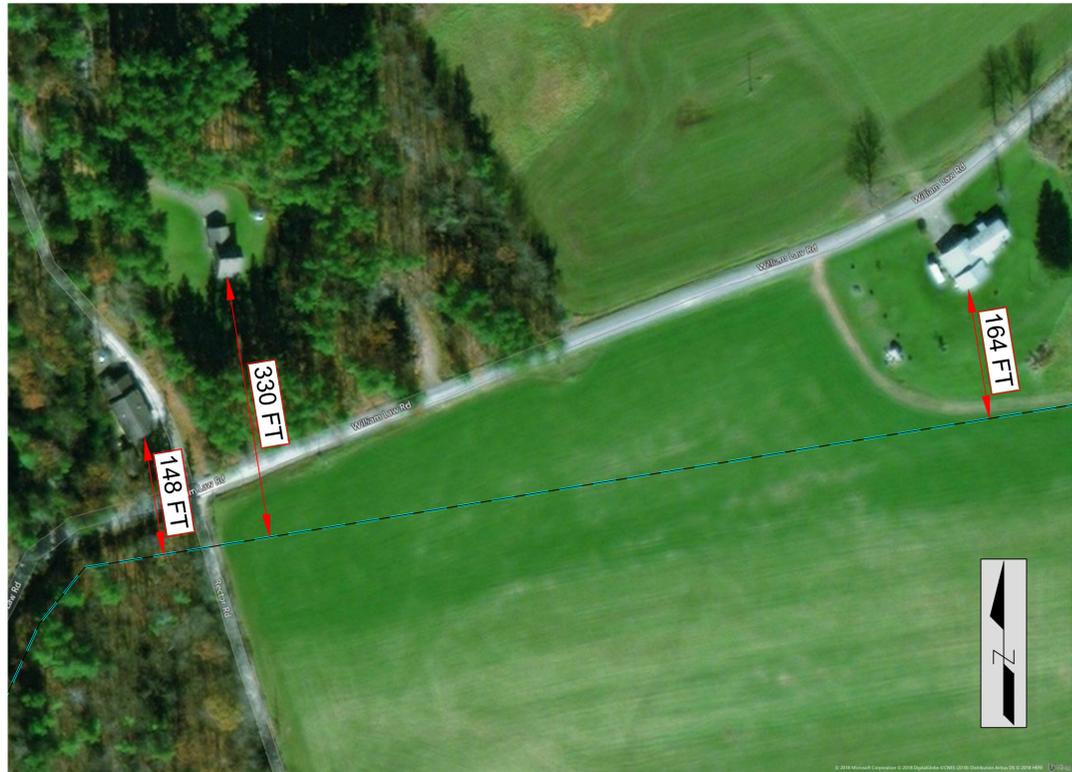
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Title  
**BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
RESIDENTIAL CLEARANCES**

<b>PRELIMINARY NOT FOR CONSTRUCTION</b> REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	BK	Eng check	SA
	Drawn	BK	Approved	SA
	Dwg check	MB	Project Mngr	HM
	Scale at ANSI D	N.T.S.	Date	7/13/2018
			Rev	<b>B</b>
Drawing Number		<b>BLS-E-550-02</b>		

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LEGEND

- ACCESS ROAD
- CIRCUIT 1
- CIRCUIT 2
- CIRCUIT 3
- CIRCUIT 4
- CIRCUIT 5
- EXISTING TRANSMISSION LINE

WIND TURBINE GENERATOR (WTG)

NOTES

- ALL INFORMATION SHOWN IS CONCEPTUAL IN NATURE.
- LAYOUT IS BASED ON VESTAS V150-4.2 TURBINES WHICH HAVE A 4.2MW OUTPUT EACH.

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	8/22/2018	JRR	ISSUED FOR REVIEW	DH	SA
A	7/13/2018	BK	ISSUE TO CLIENT	MB	SA

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Title **BLUESTONE WIND FARM  
UNDERGROUND COLLECTION  
RESIDENTIAL CLEARANCES**

<b>PRELIMINARY NOT FOR CONSTRUCTION</b> REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION	Designed	BK	Eng check	SA	
	Drawn	BK	Approved	SA	
	Dwg check	MB	Project Mngr	HM	
	Scale at ANSI D	N.T.S.	Date	7/13/2018	Rev
Drawing Number		BLS-E-550-03			

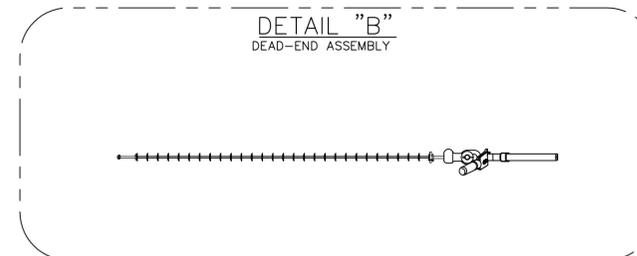
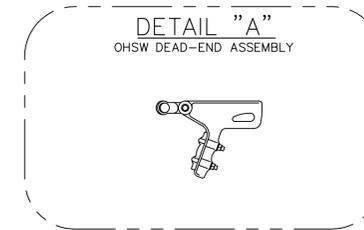
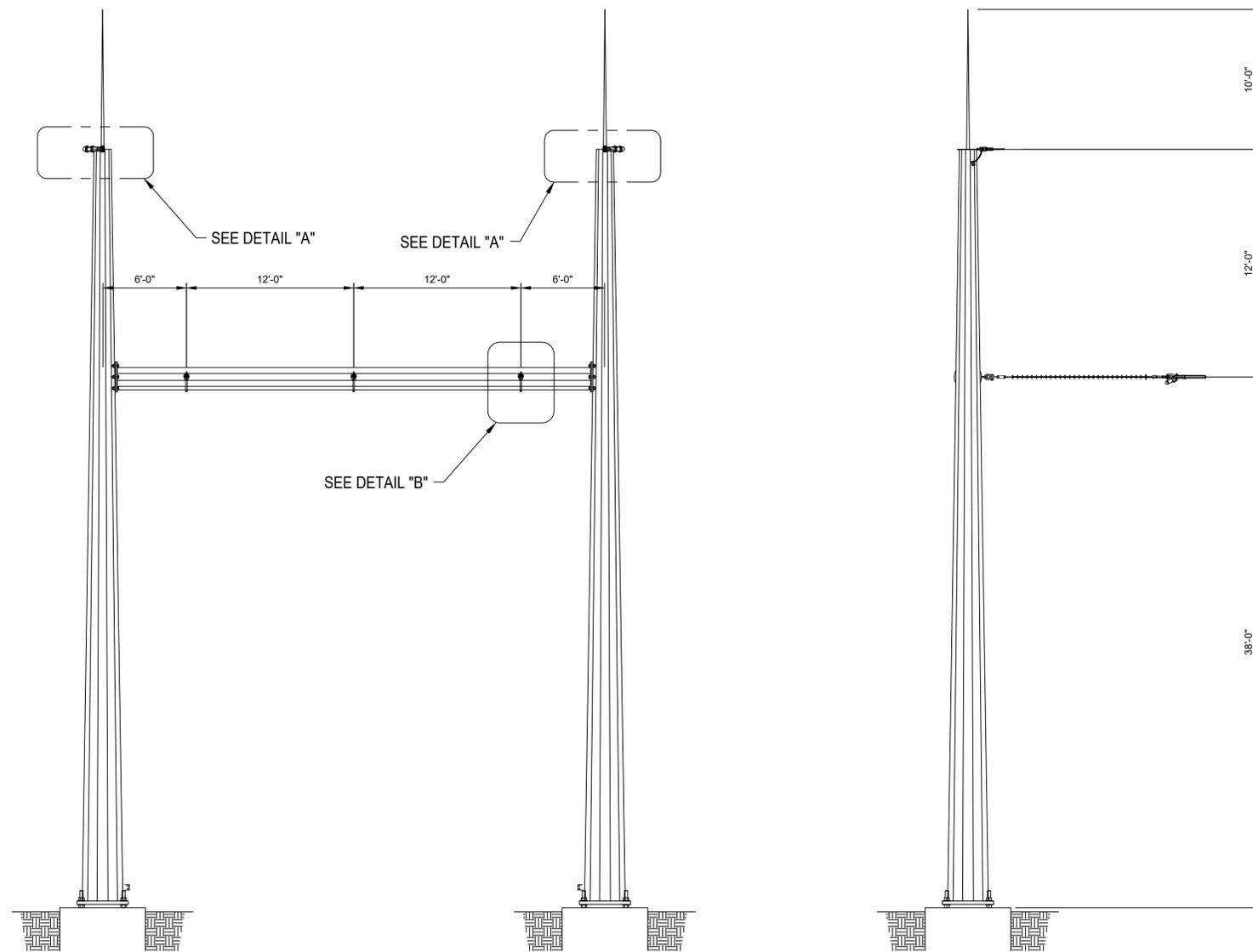
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## Bluestone Wind Transmission Line Details

NOTES

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Rev	Date	Drawn	Description	Ch'k'd	App'd
C	8/22/2018	JRR	Issued for Review	DH	SA
B	8/17/2018	BK	Issued for Review	MB	SA
A	7/16/2018	BK	Issued for Review	MB	SA

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Client

Title  
**BLUESTONE WIND FARM  
115kV TRANSMISSION  
SUBSTATION BAY DEAD-END**

PRELIMINARY NOT FOR CONSTRUCTION REPLACE WITH ENGINEERS STAMP AND/OR FABRICATION	Designed	BK	Eng check	MB
	Drawn	BK	Approved	SA
	Dwg check	MB	Project Mngr	HM
	Scale at ANSI D	N.T.S.	Date	7/16/2018
Drawing Number		<b>BLS-T-100-01</b>		

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