ADDRESS: 10955 73RD AVE N MAPLE GROVE MN PROJECT NAME: P.178754



SITE LOCATION

PERMITS REQUIRED:

- **CITY OF MAPLE GROVE** 1.
- 2. HENNEPIN COUNTY



CONSTRUCTION PRINTS

CONTACT INFO:

Network Implementation Program Manager 425 Monroe St, Anoka, MN 55303 tel: 952-351-2330 cell: 651-202-1431 paul.polk@lumen.com

SITE INDEX

1 - COVER SHEET/SITE LOCATION 2 - LEGEND 2 - LEGEIND 3 - GENERAL & ENVIRONMENTAL NOTES 4 - FRAC OUT CONTINGENCY PLAN 5-8 - PROJECT SHEETS 9 - RATE CARD TABLE

SCOPE OF WORK:

Lumen will construct a 24-count fiber optic building entry into the point of demarcation at 10955 73rd Ave N, Maple Grove MN.

Lumen will bore (2) 1.5" conduit/48-count fiber optic cable approximately 2300' from splice point 0895T25Q located at the intersection of Elm Creek Blvd N and Zachary LNN and will intercept the customer owned conduits at the edge of the property line.

Lumen will hold construction at the property line until the building demarcation is available. Lumen will pull approximately 750' of 24-count indoor/outdoor cable from the right of way into the demarc and terminate at the fiber distribution panel within the room.

SYMBOL CORRESPONDS TO PHOTO LOCATIONS AND ORIENTATION. SEE SHEET # FOR SITE PHOTOGRAPHS.

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COMMENT

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3 E CONNUNICATIONS LEVEL 3 ENGINEER: PAUL POLK ENGINEERING FIRM: MI-TECH SERVICES PROJECT NUMBER: N.850430 LOCATION: 10955 73RD AVE N MAPLE GROVE MN DRAWING NAME: MG-P.178754- 10955 N73rd Ave-TCP.dwg IAI /PROPRIETAR) SHEET: 1 OF

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LINETYPES — — B — — — B — — — B — — — ■B====B===B==== · · ____ -F -SEW -SD--TV--STM--OIL--UNK--R/W--EOP-

DESCRIPTION SYMBOL ASW ASPHALT SIDEWALK BIP BLACK IRON PIPE BSP BLACK STEEL PIPE CSW CONCRETE SIDEWALK EOP EDGE OF PAVEMENT EOTW EDGE OF TRAVEL WAY FACE OF CURB FOC HDPE HIGH DENSITY POLYETHYLENE ΗH HANDHOLE JUNCTION BOX JB MH MANHOLE MP MILE POST O/S OFFSET PVC POLY VINYL CHLORIDE RGS RIGID GALVANIZED STEEL CONDUIT ROW RIGHT OF WAY STA. STATION

UG FIBER - EXISTING UG FIBER - PROPOSED
AERIAL FIBER - EXISTING AERIAL FIBER - PROPOSED
STRAND - EXISTING STRAND - PROPOSED
CONDUIT - EXISTING CONDUIT - PROPOSED
INNERDUCT - EXISTING INNERDUCT - PROPOSED
GAS
WATER
TELEPHONE
ELECTRIC
SANITARY SEWER (SEW)
STORM DRAIN
FENCE
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HH-
HANDHOLE OWNER
MH- MH MANHOLE OWNER
OTHER

MH-MH MANHOLE LEVEL3

PB-PB PULLBOX OWNER

PB-PB PULLBOX LEVEL3

LEGEND

RISER TELEPHONE	V	VAULT - EXISTING	POLE NO N/A UTILITY1 0'-0"	POLE ATTACHMENT CALLOUT - EXISTING USE DYNAMIC PULL DOWN TO SELECT FROM 1 TO 6 ATTACHMENTS
POWER VAULT CATCH BASIN/INLET FIRE HYDRANT	V	VAULT - PROPOSED	POLE NO N/A UTILITY1 0'-0"	POLE ATTACHMENT CALLOUT - PROPOSED USE DYNAMIC PULL DOWN TO SELECT FROM 1 TO 6 ATTACHMENTS
GROUND/BOND TRAFFIC CONTROL CABINET	0' 0'	AERIAL STORAGE - EXISTING	CABLE FIBERS: FIBERS CABLE OWNER: LEVEL3 CABLE LENGTH: LENGTH	CABLE SPAN CALLOUT - EXISTING FOR USE ON PAPER SPACE (SHOWN AT 50X)
STREET LIGHT	\sim	AERIAL STURAGE - PROPOSED	CABLE FIBERS: FIBERS CABLE OWNER: LEVEL3	CABLE SPAN CALLOUT - PROPOSED FOR USE ON PAPER SPACE (SHOWN AT 50X)
CULVERT	0'	VAULT/BUILDING STORAGE - EXISTING	CABLE LENGTH: LENGTH NOTES:	
WING WALL	C'	VAULT/BUILDING STORAGE - PROPOSED	CONDUIT OWNER: LEVEL3 CONDUIT LENGTH: LENGTH CONDUIT QTY: CONDUITS CONDUIT SIZE: SIZE CONDUIT SIZE: TYPE	CONDUIT CALLOUT - EXISTING FOR USE ON PAPER SPACE (SHOWN AT 50X) WITH OR WITHOUT INNER DUCT INFO
BRIDGE	\rightarrow	POLE ANCHOR/DOWN GUY - EXISTING	INNER DUCT QTY: INNERDUCTS INNER DUCT SIZE INNER DUICT TYPE	
MISC. UTILITY	\prec	POLE ANCHOR/DOWN GUY - PROPOSED	NOTES:	
UTILITY POLE - EXISTING		PROPOSED DOWN GUY ON EXISTING ANCHOR	CONDUIT OWNER: LEVEL3 CONDUIT LENGTH: CONDUIT QTY: CONDUITS CONDUIT SIZE: SIZE CONDUIT TYPE: TYPE	CONDUIT CALLOUT - PROPOSED FOR USE ON PAPER SPACE (SHOWN AT 50X) WITH OR WITHOUT INNER DUCT INFO
POLE - PROPOSED	FDP NAME SIZE	TERMINATION - EXISTING	INNER DUCT QTY: INNERDUCTS INNER DUCT SIZE: SIZE INNER DUCT TYPE: TYPE NOTES:	
HANDHOLE - EXISTING	FDP NAME SIZE	TERMINATION - PROPOSED	T STRAND TYPE: TYPE STRAND LENGTH: LENGTH NOTES:	STRAND CALLOUT - EXISTING FOR USE ON PAPER SPACE (SHOWN AT 50X)
HANDHOLE - PROPOSED	BULDING NAME STREET	BUILDING CALLOUT - PROPOSED	STRAND TYPE: TYPE STRAND LENGTH: LENGTH NOTES:	STRAND CALLOUT - PROPOSED FOR USE ON PAPER SPACE (SHOWN AT 50X)
MANHOLE - EXISTING	MANUFACTURER NAME	SPLICE POINT - EXISTING		
MANHOLE - PROPOSED	MANUFACTURER NAME	SPLICE POINT - PROPOSED		
PULLBOX - EXISTING	#F <u>IN: 0</u> OUT: 0	SEQUENTIAL CALLOUT	811	3 AS-BUILT 2 REVISION # 1 1 1/18/24 CLM ORIGINAL
	#F IN: 0 TAIL: 0	SEQUENTIAL IN TAIL CALLOUT	Know what's below. Call before you dig.	NO. DATE ENG DESIGN DRAFTING COMMENT
PULBOX - PROPOSED	#F TAIL: 0 OUT: 0	SEQUENTIAL TAIL OUT CALLOUT		LEVEL 3 ENGINEER: PAUL POLK ENGINEERING FIRM: MI-TECH SERVICES
			-	LOCATION: 10955 73RD AVE N MAPLE GROVE MN

DRAWING NAME: MG-P.178754- 10955 N73rd Ave-TCP.dwg SHEET: 2 OF 9

CONFIDENTIAL/PROPRIETARY

GENERAL AND ENVIRONMENTAL NOTES

GENERAL

- 1. CONTRACTOR MUST OBTAIN LOCATES PRIOR TO DISTURBING THE GROUND.
- 2. CONTRACTOR MUST HAVE A COPY OF THE APPROVED PERMIT FROM THE APPROPRIATE AGENCY ON THE JOBSITE AT ALL TIMES.
- 3. ALL CABLE WILL BE PLACED AT STANDARD MINIMUM DEPTH. (LEVEL 3 STANDARD IS 36" DEEP UNLESS OTHERWISE DIRECTED BY A LEVEL 3 REPRESENTATIVE).
- 4. ANY LANDSCAPING WILL BE REPLACED TO EQUAL OR BETTER THAN THAT WHICH EXISTED PRIOR TO WORK.
- 5. PROJECT SITE WILL BE PROPERLY SECURED PRIOR TO THE END OF EACH DAY.
- 6. ALL WORK IS TO BE IN ACCORDANCE WITH ALL AUTHORITIES HAVING JURISDICTION IN THE WORK ZONE.
- 7. CONTRACTORS ARE ADVISED TO CONTACT LEVEL 3 FOR ANY ADDITIONAL INFORMATION OR CLARIFICATION CONCERNING SCOPE OF WORK OR THE REQUIREMENTS NECESSARY FOR PROJECT COMPLETION.
- 8. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL DIMENSIONS, QUANTITIES AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION. IF A SIGNIFICANT CHANGE TO THE RUNNING LINE IS NEEDED, PLEASE CONTACT YOUR LEVEL 3 REPRESENTATIVE BEFORE PROCEEDING.
- 9. BEFORE CONSTRUCTION BEGINS, CONTRACTOR SHALL TAKE APPROPRIATE PRECAUTIONS TO AVOID ANY POTENTIAL OBSTRUCTIONS PRIOR TO PROCEEDING WITH WORK.
- 10. NO CONSTRUCTION ON PRIVATE PROPERTY WILL COMMENCE UNTIL APPROVAL IS GIVEN BY THE APPROPRIATE LEVEL 3 EMPLOYEE.
- 11. CONTRACTOR SHALL NOT PROCEED WITH WORK UNTIL THEY HAVE RECEIVED A PURCHASE ORDER AND HAVE BEEN DIRECTED TO DO SO BY AN AUTHORIZED LEVEL 3 REPRESENTATIVE.
- 12. CONTRACTOR SHALL NOT EXCEED THE PURCHASE ORDER VALUE WITHOUT AUTHORIZATION IN WRITING FROM THE APPROPRIATE LEVEL 3 REPRESENTATIVE.
- 13. AS-BUILTS WILL BE REQUIRED FOR EACH PROJECT INCLUDING CABLE FOOTAGE SEQUENTIALS AT EVERY ACCESS POINT, SLACK LOOP, SPLICE LOCATION, RISER POLE AND TERMINATION POINT. CONTRACTOR SHOULD ALSO PROVIDE NOTES OF ALL CHANGES IN DEPTHS, RUNNING LINES, MH/HH LOCATIONS, AND ANY OTHER APPLICABLE NOTES TO DEPICT THE WORK THAT TOOK PLACE. NOTE: ALL MAJOR CHANGES NEED TO BE PRE-APPROVED BY AN AUTHORIZED LEVEL 3 EMPLOYEE PRIOR TO STARTING THE WORK.
- 14. DRILL 10" DIAMETER CORE OF SURFACE OVER EXISTING UTILITY LINE.
- 15. REMOVE INTACT CORE FOR LATER REPLACEMENT.
- 16. VACUUM EXCAVATE TO LOCATE UTILITY.
- 17. DIRECTIONAL BORE AND PULL BACK CABLE OR CONDUIT.
- 18. VACUUM WATER/MUD AS NECESSARY.
- 19. SLURRY BACKFILL WITH #1 SAND AND STONE MIX.
- 20. APPLY UTILIBOND EXPOXY OR EQUIVALENT AND RE-INSERT
- CORE PER MANUFACTURERS SPECIFICATIONS.

EROSION CONTROL

- 21. IF SOIL DISTURBANCE OCCURS ON SLOPES, CHANNELS, OR DITCHES LEADING TO WETLANDS
 - AND/OR WATERWAYS, THE DISTURBED AREAS SHALL BE STABILIZED AND APPROPRIATE EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPs) SHALL BE IMPLEMENTED.
- 22. EROSION CONTROL BMPs SHALL MEET OR EXCEED THE APPROVED WDNR STORM WATER MANAGEMENT TECHNICAL STANDARDS
 - (http://dnr.wi.gov/topic/stormwater/standards/const_standards.html).
- 23. INSPECT INSTALLED EROSION CONTROL BMPs AT LEAST ONCE PER WEEK AND AFTER $\frac{1}{2}$ INCH RAIN EVENTS; REPAIR, AS NECESSARY.
- 24. WHEN TEMPORARY STABILIZATION IS REQUIRED (e.g. FOR WINTER OR SHORT-TERM CONSTRUCTION) PRIOR TO FINAL RESTORATION, SOIL STABILIZER SHALL BE INSTALLED WHEREVER POSSIBLE. EROSION MAT SHALL BE USED TEMPORARILY ONLY WHERE APPROPRIATE, IN ACCORDANCE WITH STATE STANDARDS.
- 25. TEMPORARY STORAGE OF ANY EXCAVATED MATERIAL WILL NOT BE PERMITTED IN THE FLOODPLAIN OR WETLAND AREA.
- 26. SALVAGED TOPSOIL SHALL NOT BE PLACED ON SUB-GRADE UNTIL APPROVED BY ENGINEER
- 27. DO NOT USE FERTILIZER IN AREAS THAT ARE WITHIN 10 FEET OF WETLANDS OR EXISTING WATERWAYS
- 28. DISTURBED AREAS WITHIN THE RIGHT-OF-WAY SHALL BE RESTORED BY DIRECTION OF THE ENGINEER WITH THE FOLLOWING FINISHING ITEMS: SALVAGED TOPSOIL, SEED, FERTILIZER, AND MULCH. QUANTITIES FOR FINISHING ITEMS INCLUDE RESTORATION EXTENDING 3 FEET BEYOND THE SLOPE.
- 29. STOCKPILE EXCESS MATERIAL OR SPOILS ON UPLAND AREAS AWAY FROM WETLANDS, FLOOD PLAINS, AND WATERWAYS. STOCKPILED SOIL SHALL BE PROTECTED AGAINST EROSION. IF STOCKPILED SOIL IS LEFT FOR MORE THAN FOURTEEN CALENDAR DAYS, SEED THE STOCKPILE WITH TEMPORARY SEED.
- 30. EROSION CONTROL DEVICES WILL BE PLACED IN SEQUENCE WITH CONSTRUCTION ACTIVITIES.
- 31. THE MAJORITY OF WORK WILL BE STAGED FROM THE PUBLIC ROADWAYS AND ROAD

SHOULDERS, KEEPING EQUIPMENT OUT OF ANY ADJACENT WETLANDS.

- 32. ALL WORK WILL BE CONDUCTED TO MINIMIZE SOIL DISTURBANCE.
- 33. IF SOILS ARE NOT FROZEN OR STABLE TO A POINT THAT AVOIDS RUTTING, TIMBER MATS, MUD TRACKS, OR EQUIVALENT WILL BE UTILIZED TO ACCESS POLE LOCATIONS

DE-WATERING

- 34. DE-WATERING OF PITS OR TRENCHES MUST BE ONE IN ACCORDANCE WITH STATE
 - STANDARDS. USE AN APPROVED SEDIMENT BAG, A COMBINATION OF A SEDIMENT BAG AND STRAW BALE DE-WATERING STRUCTURE, OR EQUIVALENT. WATER MUST BE FILTERED BEFORE BEING RE-INTRODUCED TO ENVIRONMENT.

WATERWAYS

- 35. NO WORK WILL BE PERFORMED WITHIN THE BANKS OR BELOW THE ORDINARY HIGH WATERMARK OF THE UNNAMED WATERWAY OR TRIBUTARIES.
- 36. NO CROSSING OF NAVIGABLE WATERWAYS WITH EQUIPMENT CAN OCCUR. FOOT TRAFFIC IS ALLOWED.
- 37. ANY DISTURBED SOIL WITHIN 75 FEET OF THE ORDINARY HIGH WATER MARK OF ANY NAVIGABLE WATERWAYS/STREAMS SHALL BE STABILIZED WITHIN 24 HOURS OF CONSTRUCTION COMPLETION.



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LE\	LEVEL 3 ENGINEER: PAUL POLK								
EN	ENGINEERING FIRM: MI-TECH SERVICES								
PR	PROJECT NUMBER: N.850430								
LOO	LOCATION: 10955 73RD AVE N MAPLE GROVE MN								
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CONTRACTOR FRAC OUT CONTINGENCY PLAN FOR INADVERTENT RELEASE OF NON-HAZARDOUS DRILLING FLUIDS

CONTRACTOR WILL BE UTILIZING AN ENVIRONMENTALLY SAFE DRILLING FI UID IN COMBINATION WITH ESTABLISHED AND PROVEN DRILLING TECHNIQUES TO MINIMIZE THE POTENTIAL FOR ANY ADVERSE IMPACT TO OCCUR TO THE PIPE INSTALLATION AND SURROUNDING AREA AS A RESULT OF THE DIRECTIONAL DRILLING. THE ONLY POTENTIALLY NEGATIVE IMPACT THAT DIRECTIONAL DRILLING COULD HAVE ON THE ENVIRONMENT WOULD BE THE INADVERTENT LOSS OF DRILLING FLUID FROM THE BORE-HOLE AND ITS SUBSEQUENT MIGRATION INTO SENSITIVE AREAS. HOWEVER, THE USE OF DRILLING FLUID IS REQUIRED FOR SUCCESSFUL COMPLETION OF THE DRILLED CROSSING AND THERE IS NO ALTERNATIVE THAT CAN BE USED IN ITS PLACE. CONTRACTOR WILL IMPLEMENT THE BEST AVAILABLE MEASURES (BACT) WITHIN THE LIMITATIONS OF AVAILABLE CONSTRUCTION TECHNOLOGY TO REDUCE THE POTENTIAL FOR INADVERTENT FLUID LOSS TO THE SURROUNDING AREA AND ENSURE THAT IF DRILLING FLUID IS INADVERTENTLY LOST TO THE SURFACE THAT ANY ADVERSE ENVIRONMENTAL IMPACT IS MINIMIZED. IN ADDITION, CONTRACTOR WILL FOLLOW AN ESTABLISHED PROCEDURE TO BE USED BY THE DRILLER IN THE EVENT DRILLING FLUID IS BEING NOTICEABLY LOST FROM THE BORE-HOLE IN AN ATTEMPT TO RE-ESTABLISH CIRCULATION CONTRACTOR' FIELD PERSONNEL UNDERGO CONTINUOUS FERC ENVIRONMENTAL TRAINING CREATING AN ENVIRONMENTAL AWARENESS FOR POTENTIAL PROBLEMS.

THE DRILLING FLUID IS PRIMARILY USED TO CLEAN DRILL CUTTINGS FROM THE BORE-HOLE AS THE DOWN-HOLE CUTTERS ARE ADVANCED THROUGH THE GROUND. THE FLUID ALSO SERVES TO COOL THE DOWN-HOLE TOOLS, STABILIZE THE BORE-HOLE, AND REDUCE FRICTION BETWEEN THE GROUND FORMATION AND THE DOWN-HOLE TOOLS AND ALSO THE PRODUCT LINE DURING INSTALLATION. THE DRILLING FLUID TYPICALLY CONSISTS OF A FRESH WATER BASE WITH AN INERT ADDITIVE (TYPICALLY BENTONITE CLAY) MIXED IN TO PROVIDE FLUID PROPERTIES DESIRABLE FOR USE IN DIRECTIONAL DRILLING OPERATIONS. THE FLUID IS PUMPED FROM THE RIG DOWN THROUGH THE DRILL STEM AND INTO THE BORE-HOLE AS THE DRILLING PROGRESSES AT A RATE OF APPROXIMATELY 60 TO 150 GALLONS PER MINUTE FOR THE PILOT HOLE, REAMING, AND PRODUCT LINE INSTALLATION OPERATIONS. (ATTACHMENT MSDS/INFORMATION SHEET FOR: 1.) MAX GEL, 2.) SUPER GEL -"X" AND 3.) QUIK GEL) TYPICAL BRANDS USED BY CONTRACTOR.

DEPENDING ON THE POROSITY AND PERMEABILITY OF THE GROUND FORMATION, A SMALL PERCENTAGE (TYPICALLY LESS THAN 5%), OF THE DRILL FLUID WILL BE NATURALLY ABSORBED BY THE FORMATION. DRILLING FLUID LOST FROM THE BORE-HOLE IN THIS MANNER RARELY MIGRATES TO THE SURFACE INADVERTENTLY AND IS NOT LIKELY TO COME IN CONTACT WITH THE GROUND SURFACE OR ESTUARIES. THE FLUID NOT ABSORBED BY THE GROUND WILL FILL THE ANNULUS FROM THE BOTTOM OF THE BORE-HOLE UP AND WILL CIRCULATE BACK TO THE SURFACE VIA THE ANNULUS BETWEEN THE DRILL STEM AND THE BORE-HOLE WALL. AS LONG AS THE BORE-HOLE REMAINS OPEN. AND A PATH OF LESSER HYDRAULIC RELIEF PRESSURE IS NOT ENCOUNTERED (I.E. FORMATION FRACTURE), CIRCULATION BACK TO THE SURFACE WILL CONTINUE FOR THE DURATION OF THE DRILLING AND INSTALLATION OPERATION. CONTRACTOR WILL UTILIZE A DRILL HEAD SPECIALLY DESIGNED TO BORE A SIGNIFICANTLY LARGER DIAMETER HOLE THAN THE OUTER DIAMETER OF THE DRILL STEM TO PROVIDE ADEQUATE SPACE FOR THE FLUID TO FLOW UP THE BORE-HOLE ANNULUS.

THE ABSENCE OF AN OPEN BORE-HOLE CONDUIT OR THE PRESENCE OF A MAJOR FORMATION FRACTURE WILL TYPICALLY LEAD TO PARTIAL OR POSSIBLY FULL LOSS OF DRILLING FLUID CIRCULATION. WHILE IT IS IMPOSSIBLE TO DETERMINE THE PRECISE NATURE OF THIS TYPE OF FLUID LOSS, IT IS POSSIBLE TO ACCURATELY MONITOR FOR IT BY WATCHING FOR A SIGNIFICANT DIFFERENCE BETWEEN THE RATE THE FLUID IS BEING PUMPED DOWN-HOLE AND THE RATE IT RETURNS TO THE SURFACE. THE DRILLING FLUID PUMPING RATE AND THE RATE OF DRILLING FLUID RETURN TO THE SURFACE IS CONSTANTLY MONITORED BY THE DRILLER WHILE THE DRILLING IS PROGRESSING. THE DRILLER WILL KNOW IMMEDIATELY IF AN UNUSUALLY HIGH VOLUME OF DRILLING FLUID IS BEING LOST DOWN-HOLE, DEPENDING ON THE GROUND CONDITIONS ENCOUNTERED IN THE CROSSING AND TAKING INTO ACCOUNT THE VOLUME USED TO FILL THE BORE-HOLE. SHOULD THE DRILLER BELIEVE THAT CIRCULATION IS BEING COMPLETELY LOST HE WILL IMPLEMENT THE FOLLOWING PROCEDURES:

- 1) TEMPORARILY CEASE DRILLING OPERATIONS, INCLUDING PUMP SHUT DOWN;
- 2) DISPATCH OBSERVER AS REQUIRED TO MONITOR THE AREA IN THE VICINITY OF THE CROSSING, INCLUDING WETLAND AREAS, FOR INADVERTENT RETURNS OF DRILLING FLUID AT THE SURFACE; 3) RE-START THE PUMP AND STROKE THE BORE-HOLE UP AND DOWN
- IN STROKE LENGTHS UP TO 30 FEET.

DURING THIS PROCEDURE THE BORE-HOLE WILL BE STROKED AS MANY AS 4 TIMES BUT NO FEWER THAN 2 IN AN EFFORT TO SIZE THE BORE-HOLE ANNULUS AND RE-OPEN THE CIRCULATION PATHWAY. IN ADDITION, THE THIXOTROPIC PROPERTIES OF THE DRILLING FLUID MAY BE ALTERED (I.E. THICKENED) AT THE SAME TIME (WITHIN THE GUIDELINES SET FORTH BY THE MANUFACTURER), TO AID IN RE-ESTABLISHING CIRCULATION AS REQUIRED, DEPENDING ON BORE-HOLE CONDITIONS. THE OBSERVERS WILL CONTINUOUSLY MONITOR FOR INADVERTENT FLUID RETURNS AS LONG AS THE PUMP REMAINS ON. OCCASIONALLY, BASED ON THE DRILLER'S DISCRETION, IT MAY BE USEFUL TO INCREASE THE STROKE LENGTH UP TO 90 FEET OR PAST THE POINT AT WHICH HE BELIEVES CIRCULATION WAS LOST.

IF CIRCULATION IS RE-ESTABLISHED DRILLING WILL PROCEED AS USUAL AND MONITORING FOR INADVERTENT FLUID RETURNS WILL NO LONGER BE REQUIRED. IF CIRCULATION IS NOT RE-ESTABLISHED, MONITORING FOR INADVERTENT FLUID RETURNS TO THE GROUND SURFACE AND RIVER WILL CONTINUE AND DRILLING WILL PROCEED.

TYPICALLY LOST CIRCULATION HAS THE HIGHEST PROBABILITY OF OCCURRING WHILE THE PILOT HOLE IS BEING DRILLED DUE TO THE SMALLER BORE-HOLE ANNULUS AND THE RELATIVELY LARGE VOLUME OF SOLIDS BEING DISPLACED AND CARRIED IN THE DRILLING FLUID. OFTEN TIMES IN THE COURSE OF DRILLING THE PILOT HOLE CIRCULATION WILL BE TEMPORARILY LOST AS THE PILOT BIT IS ADVANCED THROUGH MORE PERMEABLE OR LESS COMPETENT SECTIONS OF THE GROUND FORMATION AND FLUID PRESSURES ARE AT A MAXIMUM. AS THE PILOT BIT ADVANCES BEYOND THESE SECTIONS OF THE BORE-HOLE. THE FLUID PRESSURE WILL FALL AND CIRCULATION WITHIN THE BORE-HOLE IS NATURALLY RE-ESTABLISHED. IN THESE INSTANCES, MUCH OF THE FLUID LOST TO THE FORMATION UNDER THE GREATER PRESSURES WILL RETURN BACK TO THE BORE-HOLE AS THE PRESSURES FALL, IN WHICH CASE THE DRILLING FLUID IS NOT LIKELY TO MIGRATE TO THE SURFACE OR THE RIVER. IT IS ALSO POSSIBLE FOR THE DRILLING FLUID TO LEAVE THE BORE-HOLE AND MIGRATE IN A DIRECTION OTHER THAN THE GROUND SURFACE OR A WETLAND, IN WHICH CASE IT MAY NEVER BE OBSERVED EVEN IF CIRCULATION IS LOST FOR LONG PERIODS OF TIME.

IF DRILLING FLUID RETURNS ARE OBSERVED TO BE CONTINUOUSLY SURFACING ON THE GROUND AT A LOCATION THAT IS ACCESSIBLE, THE FOLLOWING PROCEDURES WILL BE FOLLOWED:

- 1) CEASE DRILLING OPERATIONS;
- 2) CONTAIN THE LOCATION SUCH THAT THE DRILLING FLUID CANNOT MIGRATE ACROSS THE GROUND SURFACE BY CONSTRUCTING EARTHEN BERMS AND/OR IF REQUIRED, UTILIZING CONTAINMENT MATERIALS AND EQUIPMENT (I.E. HAY BALES, SILT FENCE, ETC.).
- 3) EXCAVATE A SMALL SUMP PIT AT THE LOCATION AND PROVIDE A MEANS FOR THE FLUID TO BE RETURNED TO EITHER THE DRILLING OPERATIONS OR A DISPOSAL SITE (I.E. PUMP THROUGH HOSE OR INTO TANKER);
- 4) CONTINUE DRILLING OPERATIONS AND CONTINUE MAINTAINING THE INTEGRITY OF THE CONTAINMENT MEASURES AND MONITORING THE FLUID RETURNS AS REQUIRED ENSURING THAT NO SURFACE MIGRATION OCCURS.

SPECIAL ADDITIONAL REQUIREMENTS FOR A RELEASE TO WATERWAY OR WETLAND

- 1) IF HDD RESULTS IN A RELEASE OF DRILLING FLUID TO A WATERWAY OR WETLAND, IMMEDIATELY CONTACT THE DNR SPILLS HOTLINE (800.943.0003) AND THE DNR OFFICE OF ENERGY (608.266.3524).
- 2) RELEASE OF DRILLING FLUID IN A WETLAND SHALL BE ISOLATED WITH STRAW BALES AND SILT FENCE (NO EARTHEN BERMS), FOLLOWED BY SPILL CLEANUP.
- 3) IN ORDER TO MINIMIZE DOWNSTREAM IMPACTS, RELEASE OF DRILLING FLUID IN A FLOWING WATERWAY REQUIRES ISOLATION OF SPILL FROM WATERWAY (I.E. SANDBAGS, PLYWOOD COFFER, ETC.) AND IMMEDIATE CLEANUP.

SPECIAL ADDITIONAL REQUIREMENTS FOR A RELEASE ON PAVEMENT OR ROADWAY

- IF HDD RESULTS IN A RELEASE OF DRILLING FLUID ON PAVEMENT OR ROADWAY, IMMEDIATELY CONTACT THE DNR SPILLS HOTLINE (800.943.0003) AND THE DNR OFFICE OF ENERGY (608.266.3524) ALSO CONTACT LOCAL LAW ENFORCEMENT (911).
 IMPLEMENT AN EMERGENCY TRAFFIC CONTROL PLAN THAT IS
- APPROPRIATE FOR THE SPILL AREA.
- 3) RELEASE OF DRILLING FLUID ON PAVEMENT OR ROADWAY SHALL BE ISOLATED WITH STRAW BALES, SAND BAGS OR EARTHEN BERMS, FOLLOWED BY IMMEDIATE SPILL CLEANUP.
- 4) IN ORDER TO MINIMIZE THE IMPACT TO TRAFFIC THE APPROPRIATE EQUIPMENT NEEDED TO CLEAN UP A SPILL WILL BE ON SITE OR READILY AVAILABLE.

IF INADVERTENT DRILLING FLUID RETURNS ARE OBSERVED TO BE SURFACING ON THE GROUND SURFACE AT A LOCATION THAT IS INACCESSIBLE, THE FOLLOWING PROCEDURES WILL BE FOLLOWED:

- 1) ENSURE THAT ALL REASONABLE MEASURES WITHIN THE LIMITATIONS OF THE TECHNOLOGY HAVE BEEN TAKEN TO RE-ESTABLISH CIRCULATION;
- 2) CONTINUE DRILLING WITH THE MINIMUM AMOUNT OF DRILLING FLUID AS REQUIRED TO PENETRATE THE FORMATION AND SUCCESSFULLY INSTALL THE PRODUCT LINE.

IT SHOULD BE NOTED THAT OFTEN TIMES THE DRILL CUTTINGS GENERATED AS A RESULT OF THE DRILLING PROCESS WILL NATURALLY BRIDGE AND SUBSEQUENTLY SEAL FRACTURES OR VOIDS IN THE FORMATION AS DRILLING PROGRESSES THUS PROVIDING ANOTHER MEANS OF RE-ESTABLISHING CIRCULATION. THIS IS ESPECIALLY LIKELY DURING THE REAMING PROCESS AS HIGHER VOLUMES OF LARGER CUTTINGS ARE TYPICALLY GENERATED. THEREFORE IT IS USUALLY BENEFICIAL TO PROCEED WITH THE PILOT HOLE EVEN IF CIRCULATION HAS NOT BEEN RE-ESTABLISHED SINCE IT WILL LIKELY BE RE-ESTABLISHED AT SOME POINT DURING THE REAMING PROCESS.

THE USE OF AN ENVIRONMENTALLY SAFE DRILLING FLUID ENSURES THAT EVEN IN THE EVENT OF FLUID LOSS TO SENSITIVE AREAS THAT THERE WILL BE NO ADVERSE ENVIRONMENTAL IMPACT OTHER THAN A TEMPORARY MINOR INCREASE IN TURBIDITY UNTIL THE DRILLING FLUID DISSIPATES. IT IS IMPORTANT TO NOTE THAT ANY TEMPORARY INCREASE IN THE TURBIDITY AS A RESULT OF INADVERTENT DRILLING FLUID LOSS WHILE DIRECTIONAL DRILLING THE CROSSING WILL BE SEVERAL ORDERS OF MAGNITUDE LESS THAN THAT OF AN OPEN-CUT CROSSING.

IF INADVERTENT DRILLING FLUID SHOULD MIGRATE TO THE EARTH'S SURFACE, THE CONTRACTOR' FIELD REPRESENTATIVE WILL CONTACT THE OWNER REPRESENTATIVE FOR THIS PROJECT WHO WILL IN TURN CONTACT THE APPROPRIATE GOVERNING AUTHORITIES.



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2				REVISION # 1						
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RATE CARD TABLES

Page Rate Card			
Unit Code & Description	Units	Estimated Quantity	Actual Quantity
BORE <= 2in 3 HDPE ON 1 REEL	FT	200'	
FIBER PLACE IN CONDUIT	FT	440'	
HH 30x48x36in	EACH	2	
MARKER POST	EACH	2	

Page Rate Card			
Unit Code & Description	Units	Estimated Quantity	Actual Quantity
BORE <= 2in 3 HDPE ON 1 REEL	FT	1105'	
FIBER PLACE IN CONDUIT	FT	1105'	
HH 30x48x36in	EACH		
MARKER POST	EACH		

Total Material Rate Card					
Unit Code & Description	Units	Estimated Quantity	Actual Quantity		
FIB 48 IO/RS 1JKT DIELECTRIC LT	FT	440'			
NRDCT 1.25 SDR 11 3 WAY UG	FT	200'			
30x48x36 SPLIT LID	EACH	2			
MARKER POST W/TEST STATION	EACH	2			
GROUND ROD 5/8in-8ft	EACH	2			

Total Material Rate Card					
Unit Code & Description	Units	Estimated Quantity	Actual Quantity		
FIB 48 IO/RS 1JKT DIELECTRIC LT	FT	1105'			
INRDCT 1.25 SDR 11 3 WAY UG	FT	1105'			
30x48x36 SPLIT LID	EACH				
MARKER POST W/TEST STATION	EACH				
GROUND ROD 5/8in-8ft	EACH				

Total Material Rate Card

Unit Code & Description

Page Rate Card			
Unit Code & Description	Units	Estimated Quantity	Actual Quantity
BORE <= 2in 3 HDPE ON 1 REEL	FT	915'	
FIBER PLACE IN CONDUIT	FT	915'	
HH 30x48x36in	EACH	1	
MARKER POST	EACH	1	

Page Rate Card			
Unit Code & Description	Units	Estimated Quantity	Actual Quantity
BORE <= 2in 3 HDPE ON 1 REEL	FT	33'	
FIBER PLACE IN CONDUIT	FT	153'	
HH 30x48x36in	EACH	1	
MARKER POST	EACH	1	

FIB 48 IO/RS 1JKT DIELECTRIC LT	FT	1035'	
INRDCT 1.25 SDR 11 3 WAY UG	FT	915'	
30x48x36 SPLIT LID	EACH	1	
MARKER POST W/TEST STATION	EACH	1	
GROUND ROD 5/8in-8ft	EACH	1	
Total Material Rate Card			
Unit Code & Description	Units	Estimated Quantity	Actual Quantity

Units Estimated Actual Quantity Quantity FT 1035'

Unit Code & Description	Units	Quantity	Quantity
FIB 48 IO/RS 1JKT DIELECTRIC LT	FT	120'	
FIB 24 IO/RS 1JKT DIELECTRIC LT	FT	750'	
INRDCT 1.25 SDR 11 3 WAY UG	FT	33'	
30x48x36 SPLIT LID	EACH	1	
MARKER POST W/TEST STATION	EACH	1	
GROUND ROD 5/8in-8ft	EACH	1	

TOTAL

Page Rate Card	_	_	
Unit Code & Description	Units	Estimated Quantity	Actual Quantity
BORE <= 2in 3 HDPE ON 1 REEL	FT	2220'	
FIBER PLACE IN CONDUIT	FT	3450'	
HH 30x48x36in	EACH	3	
MARKER POST	EACH	2	

Total Material Rate Card			
Unit Code & Description	Units	Estimated Quantity	Actual Quantity
FIB 48 IO/RS 1JKT DIELECTRIC LT	FT	2700'	
FIB 24 IO/RS 1JKT DIELECTRIC LT	FT	750'	
INRDCT 1.25 SDR 11 3 WAY UG	FT	2220'	
30x48x36 SPLIT LID	EACH	3	
MARKER POST W/TEST STATION	EACH	2	
GROUND ROD 5/8in-8ft	EACH	2	

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3				AS-BUILT			
2				REVISION # 1			
1	1/18/24	CLM	CLM	ORIGINAL			
NO.	DATE	ENG DESIGN	DRAFTING	COMMENT			
	Level (3)						
LE\	/EL 3 ENGIN	IEER: PAUL	POLK				
EN	ENGINEERING FIRM: MI-TECH SERVICES						
PR	PROJECT NUMBER: N.850430						
LO	LOCATION: 10955 73RD AVE N MAPLE GROVE MN						
DR	AWING NAM	E: MG-P.1787	54- 10955 N73r	d Ave-TCP.dwg			
CO	CONFIDENTIAL/PROPRIETARY SHEET: 9 OF 9						