

MIDTOWN GREENWAY COALITION INFORMATION REQUEST

- Non Public Document – Contains Trade Secret Data
 Public Document – Trade Secret Data Excised
 Public Document

Xcel Energy

Docket No.: OAH 15-2500-20599-2

PUC No. E-002/TL-09-38

Response To: Midtown Greenway Coalition

Information Request No. 29

Date Received: December 4, 2009

Question:

- A. Please state regarding Applicant's Route A – Underground Design how many feet underground it is planned that the 115 kV transmission line would be buried along the route identified in segment maps in Appendix B.3 identified as 1, 2, 3 and 4. If it is planned that different segments of the Route would be buried at different depths, please state the depth at which each segment would be buried and explain why that depth is proposed.
- B. If an alternative Route A underground route alignment has been evaluated by Applicants, please describe and provide maps detailing that alternative route alignment and state how many feet underground this alternative route alignment would be buried. If it is proposed that different segments of the alternative route alignment would be buried at different depths, please state the depth as which each segment would be buried and explain why that depth is proposed.
- C. For Applicant's Route A Underground – Design (referred to in Part A above) and any alternative Route A underground route alignments (referred to in Part B above), please provide a cross section drawing to-scale showing the placement of the transmission lines relative to the Midtown Greenway cycling and walking trails, the south Greenway shoulder, and other key defining features for each segment of the Greenway where the line placement would differ.
- D. For Applicant's Route A – Underground Design (referred to in Part A above) and any alternative Route A underground route alignments (referred to in Part B above), please describe anticipated trail detour routes or the within or outside the Greenway during construction, including routes and duration, and other anticipated impacts on trail users during construction or related to maintenance over time.
- E. (a) How many feet tall and wide is the concrete duct system without which the 115 kV transmission lines would be placed for an underground route for the Hiawatha Project? If the duct size varies depending on whether the Route A, Route D or a Route A alternative route alignment (see Part B above) is selected, please explain for each underground alternative. (b) How many feet tall and wide would Applicant's excavation need to be to

accommodate construction of the proposed underground duct system for the 115 kV Hiawatha Project? If the excavation size varies depending on whether the Route A, Route D or a Route A alternative route alignment (see Part B above) is selected, please explain for each underground alternative.

- F. What is the minimum allowable distance from the concrete duct for the 115 kV transmission line proposed by Applicants to the following potential activities:
- a) excavation for construction of new building foundations for residential or commercial development;
 - b) excavation for construction of new foundations for bridges;
 - c) excavation for construction of (i) light rail transit or (ii) streetcar lines;
- G. What is the minimum allowable distance from existing foundations for (i) buildings and (ii) bridges to the excavation that Applicants would propose to make in order to construct an underground route for the Hiawatha Project?
- H. Please cite and provide copies of any industry or governmental standards or safety codes upon which Applicants' answer to Parts F or G are based.
- I. If Route A – Underground Design or an alternative route alignment for Route A – Underground Design (see Part B above) were to conflict with reconstruction of bridges spanning the Midtown Greenway, please explain:
- a) whether the Applicant would propose to temporarily or permanently reroute the 115 kV transmission lines so that bridge reconstruction could proceed;
 - b) what other action the Applicant would propose to permit bridge reconstruction to proceed;
 - c) what would be the estimated cost for (i) rerouting the transmission line or (ii) other action to permit bridge reconstruction to proceed.
- J. If Route A – Underground Design or an alternative route alignment for Route A – Underground Design (see Part B above) were to conflict with construction of transit rails, transit platforms or transit plazas in the Greenway, please explain:
- a) whether the Applicant would propose to temporarily or permanently reroute the 115 kV transmission lines so that transit-related construction could proceed;
 - b) what other action the Applicant would propose to permit transit-related reconstruction to proceed;
 - c) what would be the estimated cost for (i) rerouting the transmission line or (ii) other action to permit transit-related reconstruction to proceed.

Response:

- A. The design depth for the length of the line along Route A is 30 inches below ground. See Application, Figure 21, p. 56.
- B. As described in Applicant's response to Midtown Greenway Coalition Information Request No. 30, Xcel Energy has evaluated a second underground alignment along Route A generally

located north of the paved surface. An aerial map showing this alignment was attached to the response as Attachment 4. The design depth for this option is 30 inches below ground.

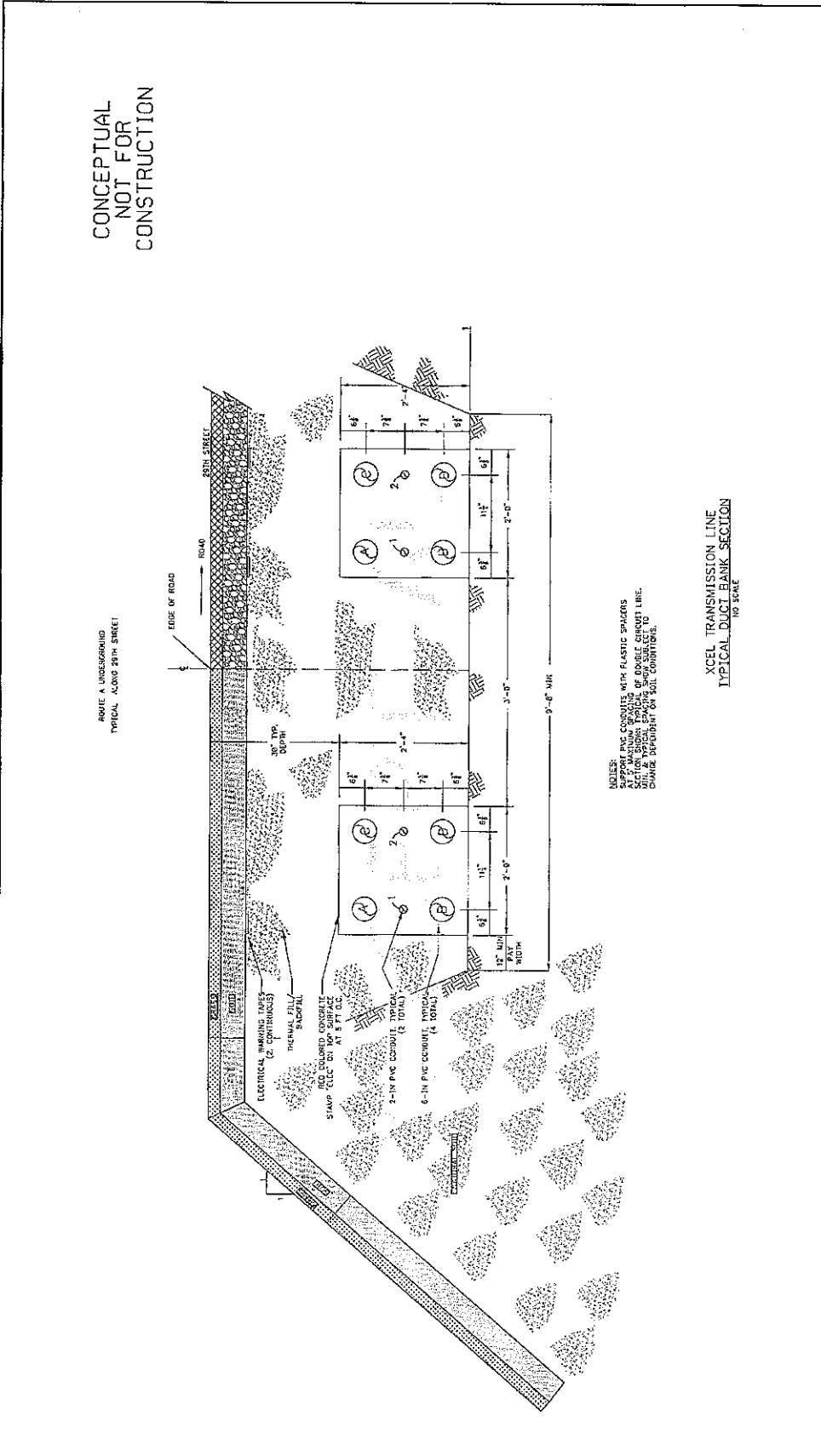
- C. See **Attachment 1**.
- D. For Route A, overhead construction, minimal closure to the trail is anticipated. Where the underground route crosses the bike path, closure would be limited to a short duration, these sections would be treated like road crossings and done at times of minimal traffic. For the underground alignments in Route A, where the underground route parallels the bike path, it is anticipated that only partial lane closures would be needed. Underground construction would likely be done in short segments of 100 to 150 feet. Two segments are opened at once to allow for adjustment and alignment of the line; therefore 200 to 300 feet of the trench would be open at one time. It typically takes one to two days to open a segment, prepare the segment for the duct bank, pour concrete and close the segment. To ensure that bicycle traffic is not interrupted, it is anticipated that a temporary path and extension of the trail will be created elsewhere in the trench or adjacent streets.
- E. Figure 21, page 56 of the Application shows the typical duct bank section and the associated excavation needed. The typical excavation area for all alignments would be similar, approximately 10 feet by 5 feet. The excavation area may be larger depending on soil conditions and whether shoring/sheeting may be required. Additional excavation may be required if poor thermal characteristics are found in the native soil and space is required for selective thermal backfill to obtain the desired thermal performance.
- F. The right-of-way width proposed for the 115 kV transmission lines (50 feet total for overhead lines and 25 feet total for underground lines) is designed to accommodate construction and maintenance of the proposed facilities. When Xcel Energy obtains right-of-way easements for new transmission facilities, it generally does not permit excavation within the right-of-way. Any proposed excavation within the right-of-way for the proposed 115 kV transmission lines would need to be carefully evaluated and assessed on a site specific basis to ensure that the excavation would not interfere with the operation of the facilities.
- G. Xcel Energy intends to construct the new facilities such that no building or bridge foundation is located within the right-of-way wherever possible and does not anticipate the construction to have any impact on the foundations of buildings or bridges. Additional information relevant to this request is provided in Applicant's response to Midtown Greenway Coalition IR No. 28, subpart A.
- H. All applicable sections of the NESC (National Electrical Safety Code), OSHA (Occupational Safety and Health Administration), and any local requirements are followed during any construction practice. None of these standards, codes, or laws gives direct requirements relevant to questions F and G above.
- I. Xcel Energy intends to construct the lines (overhead or underground) so that they do not interfere with maintenance or reconstruction of the bridges in the Project area. Xcel Energy believes any potential interference can be avoided through the detailed design process in

consultation with the City of Minneapolis to ensure that the Project design takes into account anticipated maintenance and construction activities.

- J. Xcel Energy intends to construct the lines (overhead or underground) so that they do not interfere with future transit use of the Midtown Greenway. The overhead and underground alignments along Route A described in the Application are primarily located outside of the trench area, where the Hennepin County Regional Railroad Authority is expected to construct any transit facilities. More recently, Xcel Energy has preliminarily evaluated an alignment in the Midtown Greenway, generally north of the paved surface. Xcel Energy is gathering additional information from Hennepin County and the City of Minneapolis to further assess the potential impacts of constructing the transmission facilities in Route A.

Response By: Ben Gallay
Title: Transmission Specialty Engineer
Department: Transmission Engineering & Design/Transmission Engineering
Date: 1/8/10

Response to IR 29: Attachment 1; page 1 of 4



CONCEPTUAL
 NOT FOR
 CONSTRUCTION

CONCEPTUAL
 NOT FOR
 CONSTRUCTION

THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND SPARS. CONFIDENTIAL DO NOT COPY OR DISTRIBUTE TO OTHERS WITHOUT EXPRESS WRITTEN CONSENT FROM XCEL ENERGY	REV	DATE
NSP OPERATING AREA ENGINEERING Minneapolis, MN	59	
SCALE		
XcelEnergy		
FIGURE 1, MCC IR 29 TYPICAL 115-161 UNDERGROUND TRANSMISSION DUCT BANK		
NO. OF SIGNIFICANT NUMBER		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

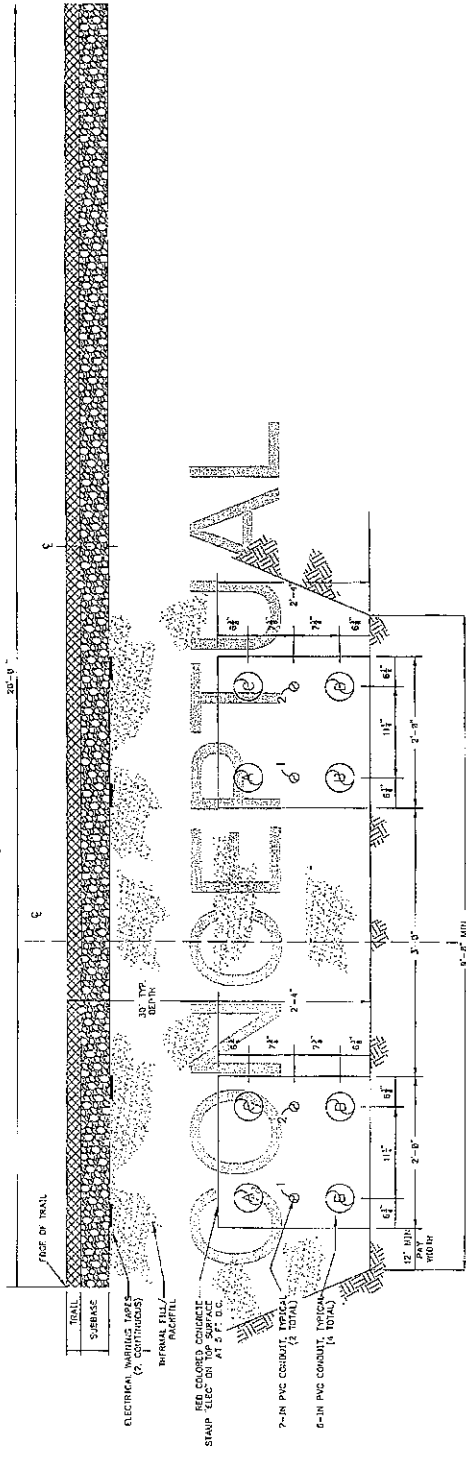
Response to IR 29; Attachment 1; page 2 of 4
 FIGURE2.dgn

11/27/2010 1:12:36 AM

CONCEPTUAL
 NOT FOR
 CONSTRUCTION

TO FACE OF TRAIL

ALTERNATE MODEL A
 TRAIL DUCT BANK SECTION
 TYPICAL OF LOCATION 9
 TABLE 1 RESPONSE TO ISSUE #29



NOTES:
 SUPPORT PVC CONDUITS WITH PLASTIC SPACERS
 SECTION SHOWN TYPICAL OF MOBILE CIRCUIT LINE
 CHANGE APPROPRIATE FOR SOIL CONDITIONS

XCEL TRANSMISSION LINE
 TYPICAL DUCT BANK SECTION
 NO SCALE

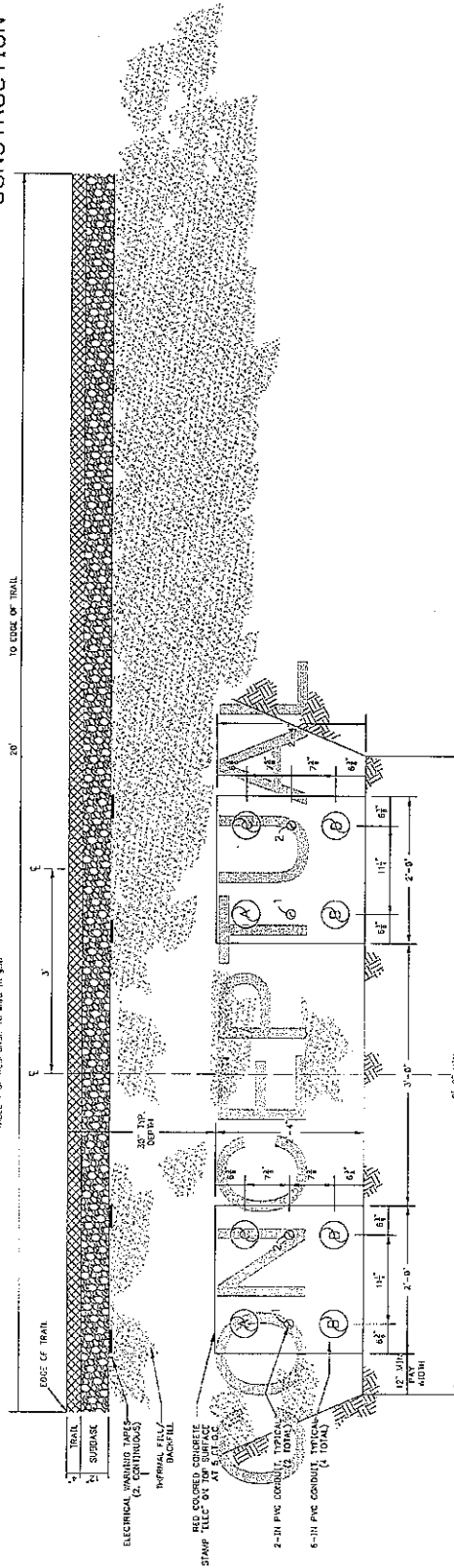
CONCEPTUAL
 NOT FOR
 CONSTRUCTION

THIS MAP/DRAWING IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND SPARS.	
CONFIDENTIAL. DO NOT COPY OR DISTRIBUTE TO OTHERS WITHOUT EXPRESS WRITTEN CONSENT FROM XCEL ENERGY.	
NSP OPERATING AREA ENGINEERING Minneapolis, MN	FIGURE 2, MCC IR 29 TYPICAL 115-161 UNDERGROUND TRANSMISSION DUCT BANK
XcelEnergy	SCALE -
REV	REV
13	6
12	5A
11	5B
10	4
9	3
8	2
7	1
6	
5	
4	
3	
2	
1	
SIGNIFICANT NUMBER	

Response to IR 29; Attachment 1; page 3 of 4
 FIGURE 3.dgn

CONCEPTUAL
 NOT FOR
 CONSTRUCTION

ALTERNATE ROUTE A
 TRAIL ADJACENT TO DUCT
 TYPICAL OF LOCATIONS 13, 14
 TABLE 1 OF RESPONSE TO MCC IR #30



NOTES:
 1. 2" PVC CONDUITS WITH PLASTIC SPACERS
 AT 2" INTERVALS SPACING 2" DOWN FROM TOP
 SURFACE OF CONCRETE. 2. 6" PVC CONDUITS
 WITH PLASTIC SPACERS AT 2" INTERVALS
 SPACING 2" DOWN FROM TOP SURFACE OF
 CONCRETE. 3. ALL DIMENSIONS ARE IN FEET
 UNLESS OTHERWISE NOTED. 4. DIMENSIONS
 MAY VARY SLIGHTLY DUE TO SOIL CONDITIONS.

XCEL TRANSMISSION LINE
 TYPICAL DUCT BANK SECTION
 (NO SCALE)

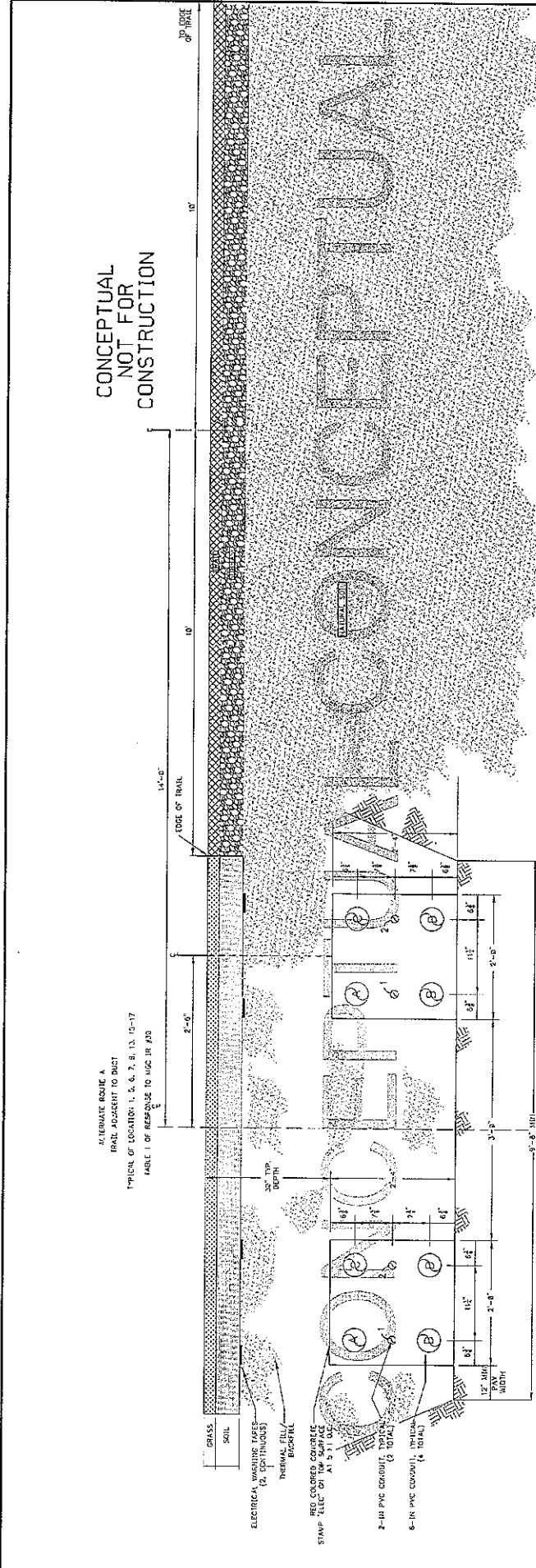
CONCEPTUAL
 NOT FOR
 CONSTRUCTION

THIS MAP/DRAWING IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND SPARS. CONFIDENTIAL: DO NOT COPY OR DISTRIBUTE TO OTHERS WITHOUT EXPRESS WRITTEN CONSENT FROM XCEL ENERGY		G SIGNIFICANT NUMBER
NSP OPERATING AREA ENGINEERING Minneapolis, MN	FIGURE 3, MCC IR 29 TYPICAL 115-161 UNDERGROUND TRANSMISSION DUCT BANK	1 2 3 4 5A 5B 6 CL
Xcel Energy®	SCALE	REV

11/24/2010 4:59 AM

1/8/2010

Response to IR 29; Attachment 1; page 4 of 4
 FIGURE 4.dgn



CONCEPTUAL
 NOT FOR
 CONSTRUCTION

ALTERNATE BOND A
 RAIL ADJACENT TO DUCT
 TYPICAL OF LOCATION 1, 2, 6, 7, 8, 13, 15-17
 TABLE 1 OF RESPONSE TO MGC IR 29

NOTES:
 SUPPORT PVC CONDUITS WITH PLASTIC SPACERS
 AT 12" INTERVALS
 USE 1/2" DIA. PLASTIC SPACERS
 USE 1/2" DIA. PLASTIC SPACERS
 CHANGE DEPENDENT OF SOIL CONDITIONS

XCEL TRANSMISSION LINE
 TYPICAL DUCT BANK SECTION
 1/8" SCALE

CONCEPTUAL
 NOT FOR
 CONSTRUCTION

THIS MAP/DRAWING IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS; YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES, AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND SPARS.		CONFIDENTIAL: DO NOT COPY OR DISTRIBUTE TO OTHERS WITHOUT EXPRESS WRITTEN CONSENT FROM XCEL ENERGY
11-31-20	AM	1/8/2010
13	CL	
12	CL	
11	CL	
10	CL	
9	CL	
8	CL	
7	CL	
6	CL	
5	CL	
4	CL	
3	CL	
2	CL	
1	CL	
0	CL	
1	CL	
2	CL	
3	CL	
4	CL	
5	CL	
6	CL	
7	CL	
8	CL	
9	CL	
10	CL	
11	CL	
12	CL	
13	CL	
14	CL	
15	CL	
16	CL	
17	CL	
18	CL	
19	CL	
20	CL	
21	CL	
22	CL	
23	CL	
24	CL	
25	CL	
26	CL	
27	CL	
28	CL	
29	CL	
30	CL	
31	CL	
32	CL	
33	CL	
34	CL	
35	CL	
36	CL	
37	CL	
38	CL	
39	CL	
40	CL	
41	CL	
42	CL	
43	CL	
44	CL	
45	CL	
46	CL	
47	CL	
48	CL	
49	CL	
50	CL	
51	CL	
52	CL	
53	CL	
54	CL	
55	CL	
56	CL	
57	CL	
58	CL	
59	CL	
60	CL	
61	CL	
62	CL	
63	CL	
64	CL	
65	CL	
66	CL	
67	CL	
68	CL	
69	CL	
70	CL	
71	CL	
72	CL	
73	CL	
74	CL	
75	CL	
76	CL	
77	CL	
78	CL	
79	CL	
80	CL	
81	CL	
82	CL	
83	CL	
84	CL	
85	CL	
86	CL	
87	CL	
88	CL	
89	CL	
90	CL	
91	CL	
92	CL	
93	CL	
94	CL	
95	CL	
96	CL	
97	CL	
98	CL	
99	CL	
100	CL	

NSP OPERATING AREA
 ENGINEERING
 Minneapolis, MN

FIGURE 4, MGC IR 29
 TYPICAL 115-161 UNDERGROUND
 TRANSMISSION DUCT BANK

XcelEnergy

SCALE

-

REV