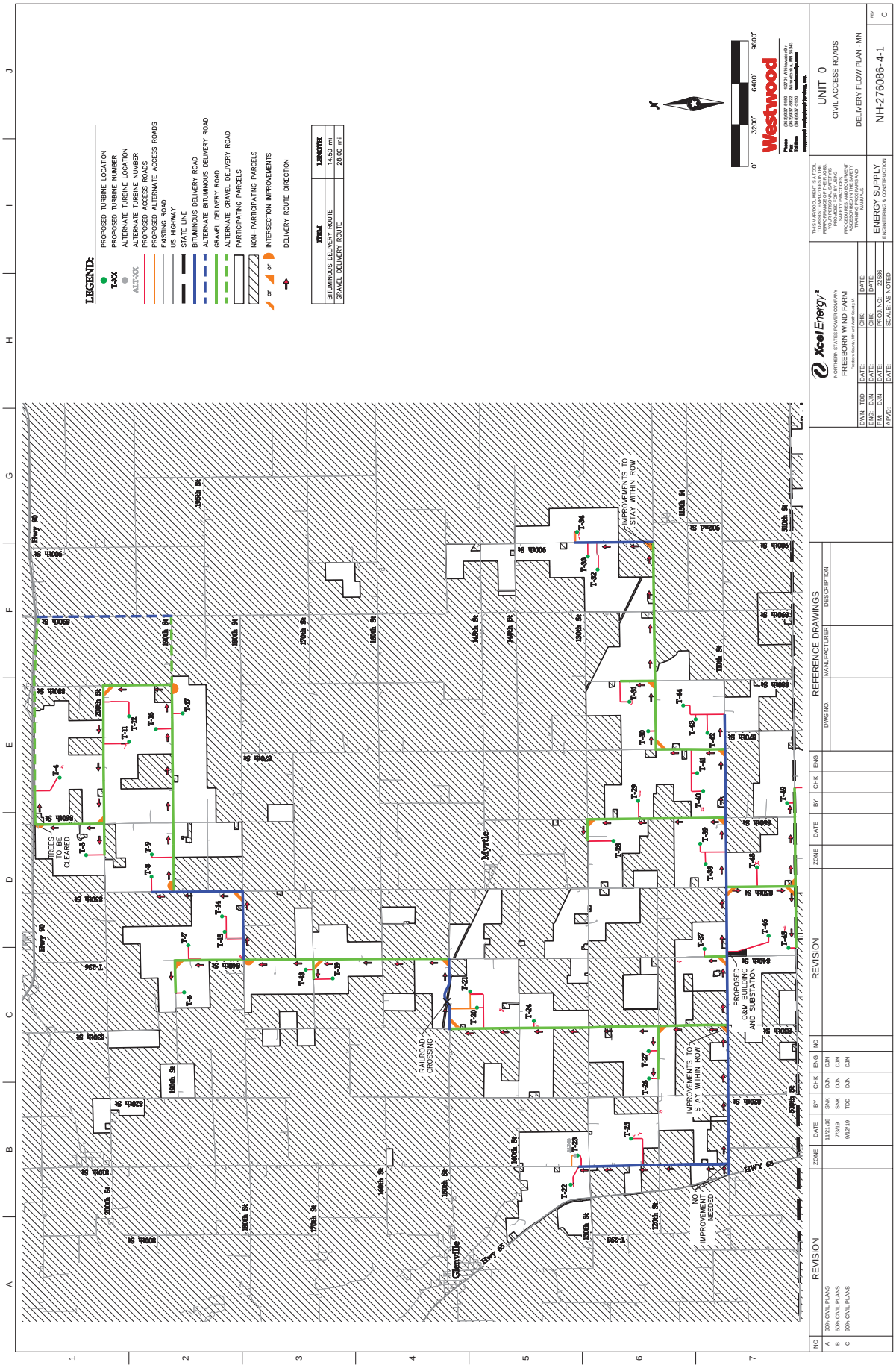
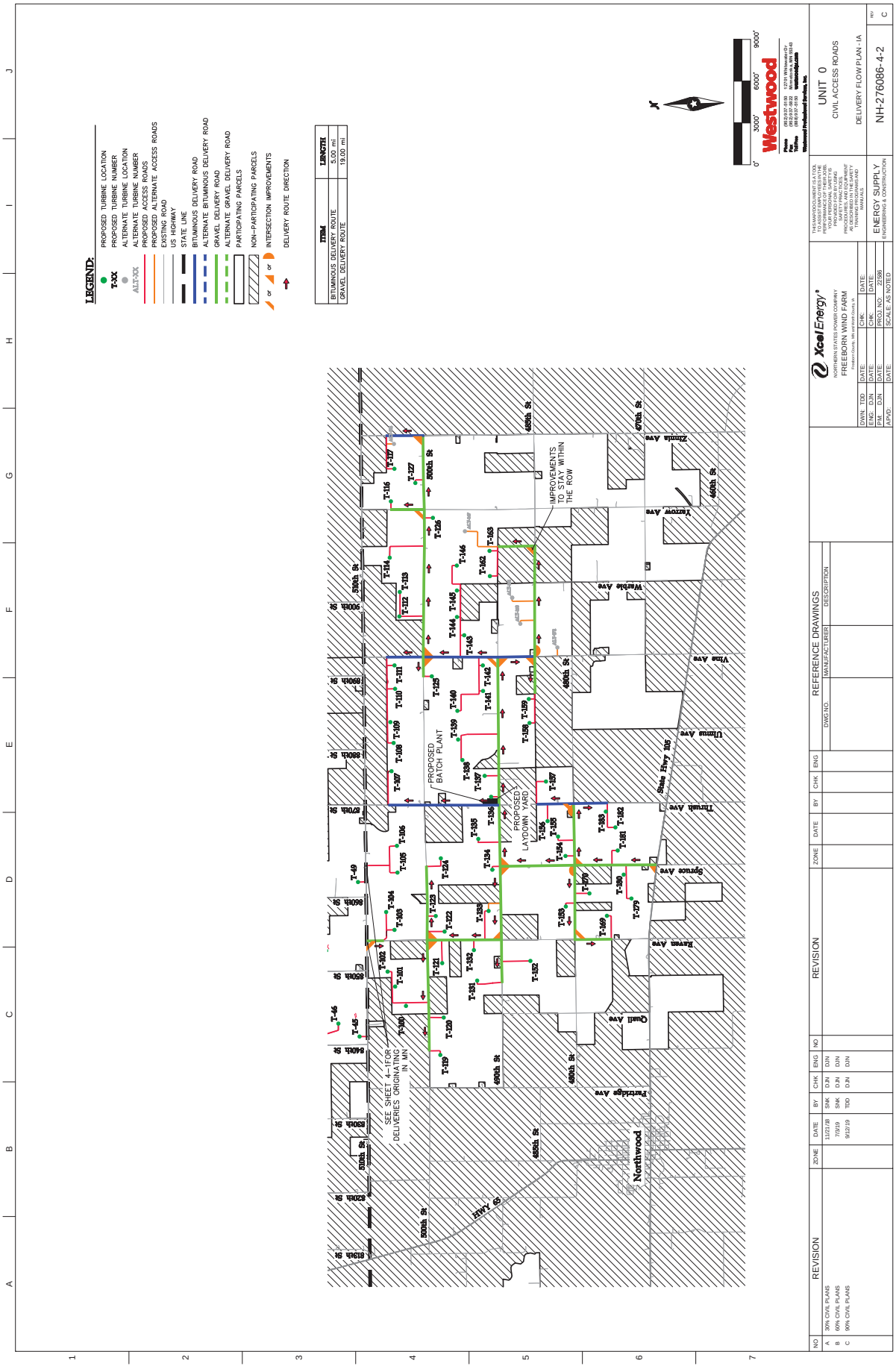
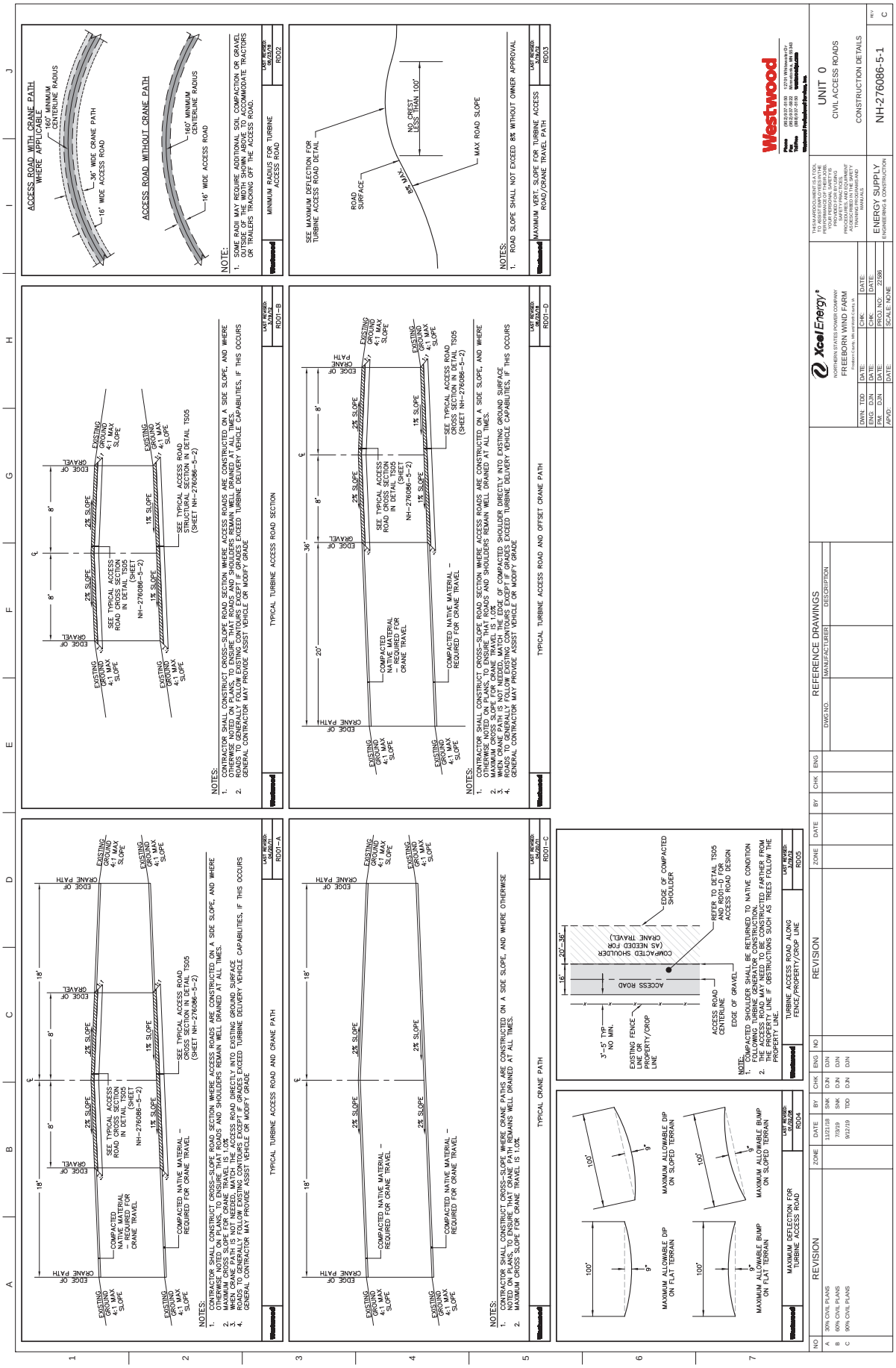
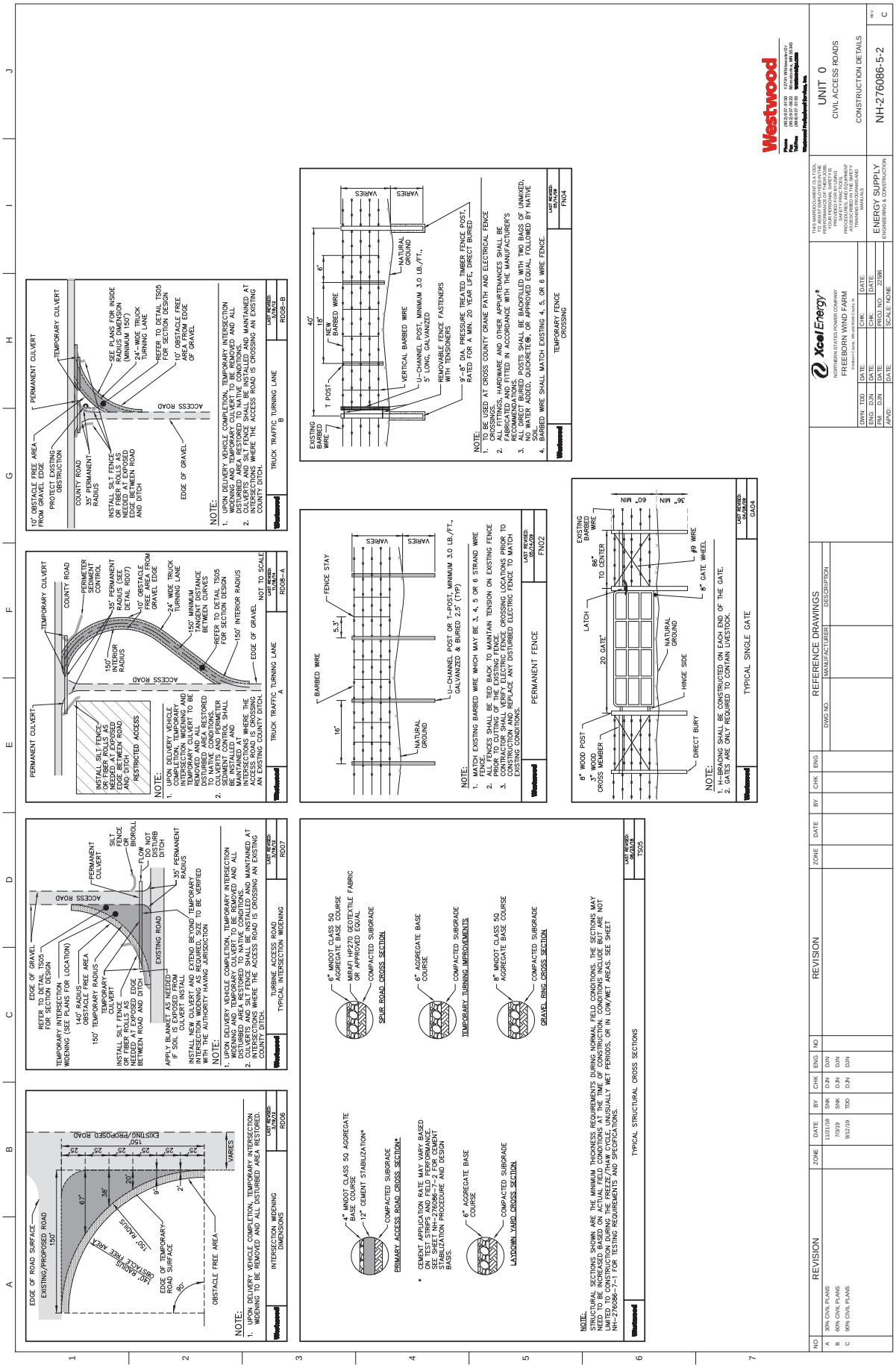

LEGEND:
PROPOSED TURBINE LOCATION
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROADS
PROPOSED ALTERNATE ACCESS ROADS
EXISTING ROAD
US HIGHWAY
STATE LINE
BITUMINOUS DELIVERY ROAD
ALTERNATE BITUMINOUS DELIVERY ROAD
GRAVEL DELIVERY ROAD
ALTERNATE GRAVEL DELIVERY ROAD
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
INTERSECTION IMPROVEMENTS
DELIVERY ROUTE DIRECTION
ITEM
LENGTH
BITUMINOUS DELIVERY ROUTE 14.50 mi
GRAVEL DELIVERY ROUTE 28.00 mi
Westwood
UNIT 0
CIVIL ACCESS ROADS
DELIVERY FLOW PLAN - MN
NH-276086-4-1
ENERGY SUPPLY
Xcel Energy
FREEBORN WIND FARM
REFERENCE DRAWINGS
REVISION
IMPROVEMENTS TO STAY WITHIN ROW
PROPOSED O&M BUILDING AND SUBSTATION
RAILROAD CROSSING
NO IMPROVEMENT NEEDED
TREES TO BE CLEARED
Myrtle
Glenville
Hwy 90
Hwy 65


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROADS
PROPOSED ALTERNATE ACCESS ROADS
EXISTING ROAD
US HIGHWAY
STATE LINE
BITUMINOUS DELIVERY ROAD
ALTERNATE BITUMINOUS DELIVERY ROAD
GRAVEL DELIVERY ROAD
ALTERNATE GRAVEL DELIVERY ROAD
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
INTERSECTION IMPROVEMENTS
DELIVERY ROUTE DIRECTION
ITEM
LENGTH
BITUMINOUS DELIVERY ROUTE
5.00 mi
GRAVEL DELIVERY ROUTE
19.00 mi
PROPOSED BATCH PLANT
PROPOSED LAYDOWN YARD
IMPROVEMENTS TO STAY WITHIN THE ROW
SEE SHEET 4-1 FOR DELIVERIES ORIGINATING IN MN
Northwood
Westwood
UNIT 0
CIVIL ACCESS ROADS
DELIVERY FLOW PLAN - IA
NH-276086-4-2
ENERGY SUPPLY
FREEBORN WIND FARM
REVISION
REFERENCE DRAWINGS


ACCESS ROAD WITH CRANE PATH WHERE APPLICABLE
160' MINIMUM CENTERLINE RADIUS
36' WIDE CRANE PATH
16' WIDE ACCESS ROAD
ACCESS ROAD WITHOUT CRANE PATH
160' MINIMUM CENTERLINE RADIUS
16' WIDE ACCESS ROAD
NOTE:
1. SOME RADII MAY REQUIRE ADDITIONAL SOIL COMPACTION OR GRAVEL OUTSIDE OF THE WIDTH SHOWN ABOVE TO ACCOMMODATE TRACTORS OR TRAILERS TRACKING OFF THE ACCESS ROAD.
MINIMUM RADIUS FOR TURBINE ACCESS ROAD
RD02
SEE MAXIMUM DEFLECTION FOR TURBINE ACCESS ROAD DETAIL
ROAD SURFACE
8% MAX
NO GREATER THAN 100'
MAX ROAD SLOPE
NOTES:
1. ROAD SLOPE SHALL NOT EXCEED 8% WITHOUT OWNER APPROVAL
MAXIMUM VERT. SLOPE FOR TURBINE ACCESS ROAD/CRANE TRAVEL PATH
RD03
TYPICAL TURBINE ACCESS ROAD SECTION
RD01-B
CRANE PATH
EDGE OF GRAVEL
EXISTING GROUND 4:1 MAX SLOPE
2% SLOPE
1% SLOPE
SEE TYPICAL ACCESS ROAD CROSS SECTION IN DETAIL TS05 (SHEET NH-276086-5-2)
NOTES:
1. CONTRACTOR SHALL CONSTRUCT CROSS-SLOPE ROAD SECTION WHERE ACCESS ROADS ARE CONSTRUCTED ON A SIDE SLOPE, AND WHERE OTHERWISE NOTED ON PLANS, TO ENSURE THAT ROADS AND SHOULDERS REMAIN WELL DRAINED AT ALL TIMES.
2. MAXIMUM CROSS SLOPE FOR CRANE TRAVEL IS 1.0%
3. WHEN CRANE PATH IS NOT NEEDED, MATCH THE ACCESS ROAD DIRECTLY INTO EXISTING GROUND SURFACE
4. ROADS TO GENERALLY FOLLOW EXISTING CONTOURS EXCEPT IF GRADES EXCEED TURBINE DELIVERY VEHICLE CAPABILITIES, IF THIS OCCURS GENERAL CONTRACTOR MAY PROVIDE ASSIST VEHICLE OR MODIFY GRADE
COMPACTED NATIVE MATERIAL - REQUIRED FOR CRANE TRAVEL
SEE TYPICAL ACCESS ROAD CROSS SECTION IN DETAIL TS05 (SHEET NH-276086-5-2)
TYPICAL TURBINE ACCESS ROAD AND CRANE PATH
RD01-A
TYPICAL TURBINE ACCESS ROAD AND OFFSET CRANE PATH
RD01-D
NOTES:
1. CONTRACTOR SHALL CONSTRUCT CROSS-SLOPE ROAD SECTION WHERE ACCESS ROADS ARE CONSTRUCTED ON A SIDE SLOPE, AND WHERE OTHERWISE NOTED ON PLANS, TO ENSURE THAT ROADS AND SHOULDERS REMAIN WELL DRAINED AT ALL TIMES.
2. MAXIMUM CROSS SLOPE FOR CRANE TRAVEL IS 1.0%
3. WHEN CRANE PATH IS NOT NEEDED, MATCH THE EDGE OF COMPACTED SHOULDER DIRECTLY INTO EXISTING GROUND SURFACE
4. ROADS TO GENERALLY FOLLOW EXISTING CONTOURS EXCEPT IF GRADES EXCEED TURBINE DELIVERY VEHICLE CAPABILITIES, IF THIS OCCURS
GENERAL CONTRACTOR MAY PROVIDE ASSIST VEHICLE OR MODIFY GRADE
TYPICAL TURBINE ACCESS ROAD AND OFFSET CRANE PATH
RD01-D
3'-5' TYP NO MIN.
EXISTING FENCE LINE OR PROPERTY/CROP LINE
16'
20'-36'
ACCESS ROAD
COMPACTED SHOULDER (AS NEEDED FOR CRANE TRAVEL)
EDGE OF COMPACTED SHOULDER
REFER TO DETAIL TS05 AND TS06 FOR ACCESS ROAD DESIGN
ACCESS ROAD CENTERLINE
EDGE OF GRAVEL
NOTE:
1. COMPACTED SHOULDER SHALL BE RETURNED TO NATIVE CONDITION FOLLOWING TURBINE GENERATOR CONSTRUCTION.
2. IF CROPS OR ORIGINAL ROAD MUST BE CONSTRUCTED FARTHER FROM THE PROPERTY LINE IF OBSTRUCTIONS SUCH AS TREES FOLLOW THE PROPERTY LINE.
TURBINE ACCESS ROAD ALONG FENCE/PROPERTY/CROP LINE
RD05
MAXIMUM DEFLECTION FOR TURBINE ACCESS ROAD
RD04
MAXIMUM ALLOWABLE DIP ON FLAT TERRAIN
MAXIMUM ALLOWABLE DIP ON SLOPED TERRAIN
MAXIMUM ALLOWABLE BUMP ON FLAT TERRAIN
MAXIMUM ALLOWABLE BUMP ON SLOPED TERRAIN
100'
9"
REVISION
NO
A 30% CIVIL PLANS 11/27/18 SMK D.JN
B 60% CIVIL PLANS 7/3/19 SMK D.JN
C 90% CIVIL PLANS 9/12/19 TDD D.JN
REFERENCE DRAWINGS
DWG NO. MANUFACTURER DESCRIPTION
Westwood
Phone 978.532.1900
Fax 978.532.1909
Titles 978.977.0100
Westwood Professional Services, Inc.
Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, Minnesota
DWN. TDD DATE:
ENG. DJN DATE:
PM. DJN DATE:
APVD: DATE:
CHK. DATE:
CHK. DATE:
PROJ. NO 27986
SCALE: NONE
THIS IMPROVEMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF WORK. YOUR PERSONAL SAFETY IS YOUR RESPONSIBILITY. PROPER USE OF TOOLS, SAFETY PRACTICES AND EQUIPMENT AS DESCRIBED IN THE SAFETY MANUAL ARE MANDATORY. THIS IMPROVEMENT MAY NOT BE USED FOR ANY PURPOSE NOT AUTHORIZED IN THE SAFETY MANUALS.
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
UNIT 0
CIVIL ACCESS ROADS
CONSTRUCTION DETAILS
NH-276086-5-1
REV C


EDGE OF ROAD SURFACE
EXISTING/PROPOSED ROAD
150'
EXISTING/PROPOSED ROAD
150' RADIUS OBSTACLE FREE AREA
67'
38'
20'
9'
2'
150' RADIUS OBSTACLE FREE AREA
EDGE OF TEMPORARY ROAD SURFACE
66'
OBSTACLE FREE AREA
VARIES
NOTE:
1. UPON DELIVERY VEHICLE COMPLETION, TEMPORARY INTERSECTION WIDENING TO BE REMOVED AND ALL DISTURBED AREA RESTORED.
INTERSECTION WIDENING DIMENSIONS
RD06
4" MNDOT CLASS 5Q AGGREGATE BASE COURSE
12" CEMENT STABILIZATION*
COMPACTED SUBGRADE
PRIMARY ACCESS ROAD CROSS SECTION*
* CEMENT APPLICATION RATE MAY VARY BASED ON ACTUAL SOIL TESTS AND FIELD PERFORMANCE. SEE SHEET NH-276086-7-2 FOR CEMENT STABILIZATION PROCEDURE AND DESIGN BASIS.
6" AGGREGATE BASE COURSE
COMPACTED SUBGRADE
LAYDOWN YARD CROSS SECTION
TYPICAL STRUCTURAL CROSS SECTIONS
TS05
NOTE:
STRUCTURAL SECTIONS SHOWN ARE THE MINIMUM THICKNESS REQUIREMENTS DURING NORMAL FIELD CONDITIONS. THE SECTIONS MAY NEED TO BE INCREASED BASED ON ACTUAL FIELD CONDITIONS AT THE TIME OF CONSTRUCTION. CONDITIONS INCLUDE BUT ARE NOT LIMITED TO CONSTRUCTION DURING THE FREEZE/THAW CYCLE, UNUSUALLY WET PERIODS, OR IN LOW/WET AREAS. SEE SHEET NH-276086-7-1 FOR TESTING REQUIREMENTS AND SPECIFICATIONS.
EDGE OF GRAVEL
REFER TO DETAIL TS05 FOR SECTION DESIGN
TEMPORARY INTERSECTION WIDENING (SEE PLANS FOR LOCATION)
140' RADIUS OBSTACLE FREE AREA
150' TEMPORARY RADIUS
TEMPORARY CULVERT
INSTALL SILT FENCE OR FIBER ROLLS AS NEEDED AT EXPOSED EDGE BETWEEN ROAD AND DITCH
ACCESS ROAD
PERMANENT CULVERT
SILT FENCE OR BIOROLL
FLOW
DO NOT DISTURB DITCH
35' PERMANENT RADIUS
EXISTING ROAD
APPLY BLANKET AS NEEDED IF SOIL IS EXPOSED FROM CULVERT INSTALL
INSTALL NEW CULVERT AND EXTEND BEYOND TEMPORARY INTERSECTION WIDENING AS NECESSARY TO BE VERIFIED WITH THE AUTHORITY HAVING JURISDICTION
NOTE:
1. UPON DELIVERY VEHICLE COMPLETION, TEMPORARY INTERSECTION WIDENING AND TEMPORARY CULVERT TO BE REMOVED AND ALL DISTURBED AREA RESTORED.
2. CULVERTS AND SILT FENCE SHALL BE INSTALLED AND MAINTAINED AT INTERSECTIONS WHERE THE ACCESS ROAD IS CROSSING AN EXISTING COUNTY DITCH.
TURBINE ACCESS ROAD TYPICAL INTERSECTION WIDENING
RD07
6" MNDOT CLASS 5Q AGGREGATE BASE COURSE
MIRAFI HP270 GEOTEXTILE FABRIC OR APPROVED EQUAL
COMPACTED SUBGRADE
SPUR ROAD CROSS SECTION
6" AGGREGATE BASE COURSE
COMPACTED SUBGRADE
TEMPORARY TURNING IMPROVEMENTS
8" MNDOT CLASS 5Q AGGREGATE BASE COURSE
COMPACTED SUBGRADE
GRAVEL RING CROSS SECTION
TS05
PERMANENT CULVERT
TEMPORARY CULVERT
COUNTY ROAD
PERIMETER SEDIMENT CONTROL
35' PERMANENT RADIUS (SEE DETAIL RD07)
10' OBSTACLE FREE AREA FROM GRAVEL EDGE
24' WIDE TRUCK TURNING LANE
150' MINIMUM TANGENT DISTANCE BETWEEN CURVES
150' INTERIOR RADIUS
ACCESS ROAD
REFER TO DETAIL TS05 FOR SECTION DESIGN
EDGE OF GRAVEL
NOT TO SCALE
NOTE:
1. UPON DELIVERY VEHICLE COMPLETION, TEMPORARY INTERSECTION WIDENING AND TEMPORARY CULVERT TO BE REMOVED AND ALL DISTURBED AREA RESTORED.
2. CULVERTS AND SILT FENCE SHALL BE INSTALLED AND MAINTAINED AT INTERSECTIONS WHERE THE ACCESS ROAD IS CROSSING AN EXISTING COUNTY DITCH.
TRUCK TRAFFIC TURNING LANE A
RD08-A
10' OBSTACLE FREE AREA FROM GRAVEL EDGE
PROTECT EXISTING OBSTRUCTION
PERMANENT CULVERT
TEMPORARY CULVERT
COUNTY ROAD
35' PERMANENT RADIUS
INSTALL SILT FENCE OR FIBER ROLLS AS NEEDED AT EXPOSED EDGE BETWEEN ROAD AND DITCH
ACCESS ROAD
SEE PLANS FOR INSIDE RADIUS DIMENSION (MINIMUM 150')
24' WIDE TRUCK TURNING LANE
REFER TO DETAIL TS05 FOR SECTION DESIGN
10' OBSTACLE FREE AREA FROM EDGE OF GRAVEL
EDGE OF GRAVEL
NOTE:
1. UPON DELIVERY VEHICLE COMPLETION, TEMPORARY INTERSECTION WIDENING AND TEMPORARY CULVERT TO BE REMOVED AND ALL DISTURBED AREA RESTORED.
2. CULVERTS AND SILT FENCE SHALL BE INSTALLED AND MAINTAINED AT INTERSECTIONS WHERE THE ACCESS ROAD IS CROSSING AN EXISTING COUNTY DITCH.
TRUCK TRAFFIC TURNING LANE B
RD08-B
BARBED WIRE
16'
5.3'
FENCE STAY
VARIES
NATURAL GROUND
U-CHANNEL POST OR T-POST, MINIMUM 3.0 LB./FT., GALVANIZED & BURIED 2.5' (TYP)
NOTE:
1. MATCH EXISTING BARBED WIRE WHICH MAY BE 3, 4, 5 OR 6 STRAND WIRE
2. FENCE ENDS SHALL BE TIED BACK TO MAINTAIN TENSION ON EXISTING FENCE
3. CONSTRUCTION SHALL INCLUDE TEMPORARY GRADING LOCATIONS PRIOR TO CONSTRUCTION AND REPLACE ANY DISTURBED ELECTRIC FENCE TO MATCH EXISTING CONDITIONS.
PERMANENT FENCE
FN02
EXISTING BARBED WIRE
T POST
40'
18'
6'
NEW BARBED WIRE
VERTICAL BARBED WIRE
U-CHANNEL POST, MINIMUM 3.0 LB./FT., 5' LONG, GALVANIZED
VARIES
NATURAL GROUND
WOVEN WIRE FENCE FASTENERS
WITH TENSIONERS
8"-10" DIA. PRESSURE TREATED TIMBER FENCE POST, RATED FOR A MIN. 20 YEAR LIFE, DIRECT BURIED
NOTE:
1. TO BE USED AT CROSS COUNTY CRANE PATH AND ELECTRICAL FENCE CROSSINGS.
2. ALL FITTINGS, HARDWARE AND OTHER APPURTENANCES SHALL BE FABRICATED AND FITTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
3. CORNER AND GATE POSTS SHALL BE BACKFILLED WITH TWO BAGS OF UNMIXED, NO WATER ADDED, QUIKRETE®, OR APPROVED EQUAL, FOLLOWED BY NATIVE BACKFILL.
4. BARBED WIRE SHALL MATCH EXISTING 4, 5, OR 6 WIRE FENCE.
TEMPORARY FENCE CROSSING
FN04
8' WOOD POST
3" WOOD CROSS MEMBER
LATCH
20' GATE*
86" TO CENTER
EXISTING BARBED WIRE
36" MIN
60" MIN
#9 WIRE
8" GATE WHEEL
NATURAL GROUND
HINGE SIDE
DIRECT BURY
NOTE:
1. H-BRACING SHALL BE CONSTRUCTED ON EACH END OF THE GATE.
2. GATES ARE ONLY REQUIRED TO CONTAIN LIVESTOCK.
TYPICAL SINGLE GATE
GA04
REFERENCE DRAWINGS
DWG NO: MANUFACTURER: DESCRIPTION
REVISION
NO: REVISION: ZONE: DATE: BY: CHK: ENG: NO:
A 30% CIVIL PLANS 11/27/18 SMK DJN DJN
B 60% CIVIL PLANS 7/3/19 SMK DJN DJN
C 90% CIVIL PLANS 9/12/19 TDD DJN DJN
Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN and Worth County, IA
DWN: TDD DATE: CHK: DATE:
ENG: DJN DATE: CHK: DATE:
TM: DJN DATE: PROJ. NO: 27986
APVD: DATE: SCALE: NONE
THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED BY FOLLOWING SAFETY PRACTICES DESCRIBED IN THE SAFETY MANUAL AND OTHER COMPANY TRAINING AND MANUALS.
UNIT 0
CIVIL ACCESS ROADS
CONSTRUCTION DETAILS
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
NH-276086-5-2
REV C
Westwood
Phone 781.251.4700
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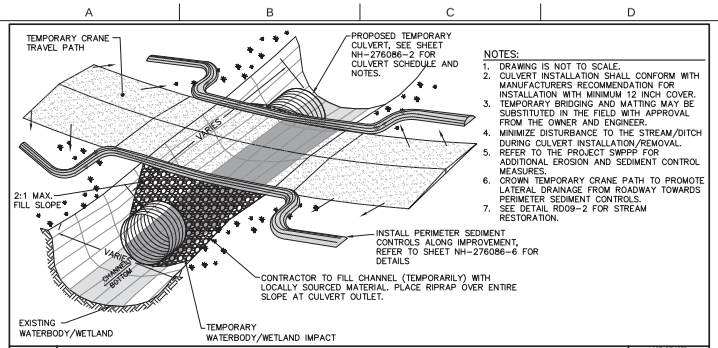
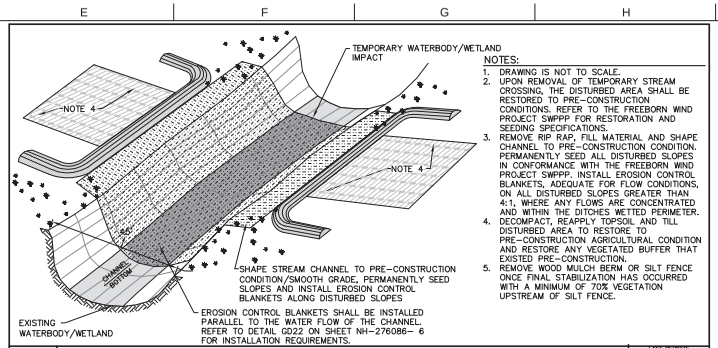
12 Technology Drive
Hudson, MA 01749
www.westwoodps.com
Westwood Professional Services, Inc.



NOTES:
1. DRAWING IS NOT TO SCALE.
2. CULVERT INSTALLATION SHALL CONFORM WITH MANUFACTURERS RECOMMENDATION FOR INSTALLATION WITH MINIMUM 12 INCH COVER.
3. TEMPORARY BRIDGING AND MATTING MAY BE SUBSTITUTED IN THE FIELD WITH APPROVAL FROM THE OWNER AND ENGINEER.
4. MINIMIZE DISTURBANCE TO THE STREAM/DITCH DURING CULVERT INSTALLATION/REMOVAL.
5. REFER TO THE PROJECT SWPPP FOR ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES.
6. CROWN TEMPORARY CRANE PATH TO PROMOTE LATERAL DRAINAGE FROM ROADWAY TOWARDS PERIMETER SEDIMENT CONTROLS.
7. SEE DETAIL RD09-2 FOR STREAM RESTORATION.

TYPICAL TEMPORARY STREAM CROSSING WITH CULVERT – CRANE CROSSING

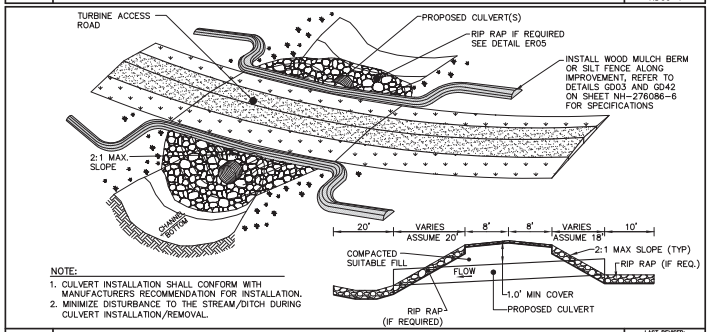
LAST REVISED: 11/30/17 | RD09-1



NOTES:
1. DRAWING IS NOT TO SCALE.
2. UPON REMOVAL OF TEMPORARY STREAM CROSSING, THE DISTURBED AREA SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS. REFER TO THE FREEBORN WIND PROJECT SWPPP FOR RESTORATION AND SEEDING SPECIFICATIONS.
3. REMOVE RIP RAP, FILL MATERIAL AND SHAPE CHANNEL TO PRE-CONSTRUCTION CONDITION. PERMANENTLY SEED ALL DISTURBED SLOPES IN CONFORMANCE WITH THE FREEBORN WIND PROJECT SWPPP. INSTALL EROSION CONTROL BLANKETS, ADEQUATE FOR FLOW CONDITIONS, ON ALL DISTURBED SLOPES GREATER THAN 4:1, WHERE ANY FLOWS ARE CONCENTRATED AND WITHIN THE DITCHES WETTED PERIMETER.
4. DECOMPACT, REAPPLY TOPSOIL AND TILL DISTURBED AREA TO RESTORE TO PRE-CONSTRUCTION AGRICULTURAL CONDITION AND RESTORE ANY VEGETATED BUFFER THAT EXISTED PRE-CONSTRUCTION.
5. REMOVE WOOD MULCH BERM OR SILT FENCE ONCE FINAL STABILIZATION HAS OCCURRED WITH A MINIMUM OF 70% VEGETATION UPSTREAM OF SILT FENCE.

TYPICAL TEMPORARY STREAM CROSSING RESTORATION

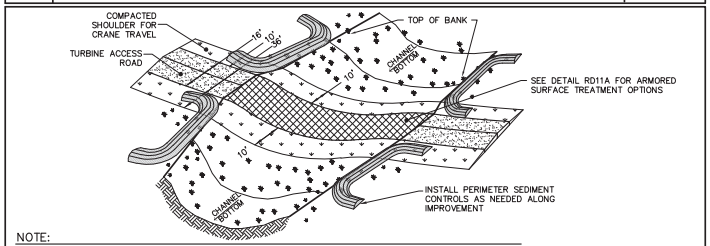
LAST REVISED: 3/19/12 | RD09-2



NOTE:
1. CULVERT INSTALLATION SHALL CONFORM WITH MANUFACTURERS RECOMMENDATION FOR INSTALLATION.
2. MINIMIZE DISTURBANCE TO THE STREAM/DITCH DURING CULVERT INSTALLATION/REMOVAL.

TYPICAL PERMANENT TURBINE ACCESS ROAD STREAM CROSSING

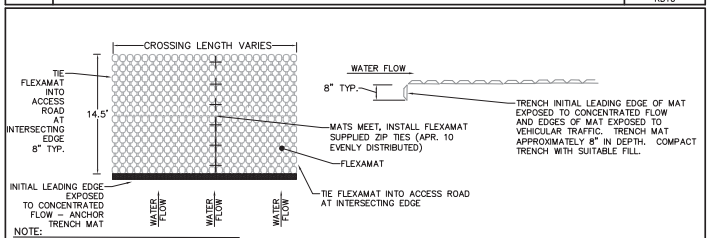
LAST REVISED: 3/19/12 | RD10



NOTE:
1. CHANNEL SIDE SLOPES MAY REQUIRE MODIFICATION TO CONSTRUCT THE ACCESS ROAD THROUGH THE CHANNEL THAT MEETS TURBINE COMPONENT DELIVERY REQUIREMENTS.
2. THE ACCESS ROAD SHALL CROSS THE CHANNEL AS CLOSE TO 90-DEGREES AS POSSIBLE.
3. THE FINISHED ACCESS ROAD SURFACE SHALL BE AT AN ELEVATION THAT ALLOWS WATER TO FLOW THROUGH THE CHANNEL UNIMPEDED AND WITHOUT PONDING UPSTREAM OF THE ROAD OR ON THE ROAD SURFACE.
4. FLEXAMAT SURFACE TREATMENT OF THE ROAD SURFACE SHALL EXTEND THROUGH THE CHANNEL BOTTOM AND UP THE CHANNEL SIDE SLOPES TO THE OBSERVED TOP OF BANK OF THE CHANNEL.
5. REFER TO DETAIL RD11-B FOR FLEXAMAT SURFACE TREATMENT DETAILS.

PERMANENT TURBINE ACCESS ROAD LOW WATER CROSSING

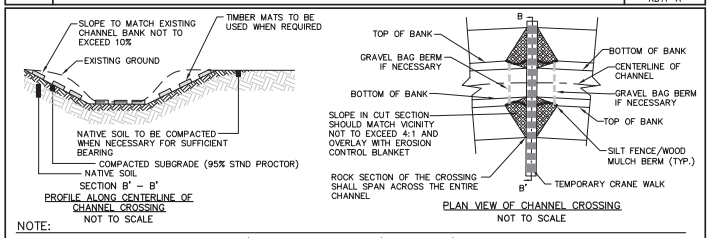
LAST REVISED: 03/09/17 | RD11-A



NOTE:
1. PREPARE THE SUB GRADE OF THE LOW WATER CROSSING SO THAT FLOW WILL BE DIRECTED TO THE CENTER OF THE CROSSING. ALL SUB GRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND PROVIDE A FIRM UNYIELDING FOUNDATION FOR THE MATS.
2. THE INITIAL LEADING EDGE OF FLEXAMAT EXPOSED TO CONCENTRATED FLOWS AND EDGES OF MAT EXPOSED TO VEHICULAR TRAFFIC SHALL BE EMBEDDED VERTICALLY INTO THE SUB GRADE TO SERVE AS AN ANCHOR TRENCH. THE TRENCH SHALL BE FILLED AND COMPACTED WITH SUITABLE FILL.
3. FOR ADDITIONAL SECTIONS OF MAT, ABUT MATS TIGHTLY.
4. INSTALL FLEXAMAT SUPPLIED ZIP TIES (APPROXIMATELY 10 EVENLY SPACED) ALONG INTERSECTING FLEXAMAT SEAMS.

TURBINE ACCESS ROAD LOW WATER CROSSING – FLEXAMAT

LAST REVISED: 03/07/17 | RD11-B



NOTE:
1. CHANNEL SLOPES TO BE MODIFIED TEMPORARILY (NON JURISDICTIONAL WATERS/WETLANDS ONLY) DURING CONSTRUCTION TO ALLOW FOR CRANE CROSSING AND RESTORE TO ORIGINAL CONDITIONS UPON SITE RESTORATION.
2. ALL DISTURBED AREAS SHALL BE RESTORED TO EXISTING CONDITIONS.
2. CROSSINGS SHALL HAVE THE TOP-MOST SURFACE LAYER A MINIMUM OF 2.5 INCHES BELOW THE STREAM CHANNEL BOTTOM.
3. THE CRANE WALK SHALL CROSS THE DITCH AT 90° ANGLE.
4. THE TOP BED OF THE CHANNEL CROSSING SHALL CONFORM TO THE EXISTING DITCH CROSS SECTIONAL SLOPES.
5. COMPACTION MAY BE FIELD ADJUSTED TO ACHIEVE SUFFICIENT BEARING CAPACITIES AS ARE NECESSARY FOR ANTICIPATED ROAD USE AS FIELD DETERMINED BY THE CRANE SUPERINTENDENT.
6. GRAVEL BAG BERMS MAY BE NECESSARY IF FLOWS AND DRAINAGE AREAS REQUIRE. SEE DETAIL RD13 FOR GRAVEL BAG BERM INSTALLATION.

STREAM/WATERBODY/DRAINAGE SWALE TIMBER MAT CRANE CROSSING

LAST REVISED: 11/30/17 | RD12

Westwood
Phone (952) 937-5150 | 12701 Whitewater Dr.
Fax (952) 937-5822 | Minnetonka, MN 55343
Toll Free (888) 937-5150 | www.westwoodps.com
Westwood Professional Services, Inc.

NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN
C	90% CIVIL PLANS		9/12/19	TDD	DJN	DJN

NO	REVISION	ZONE	DATE	BY	CHK	ENG

REFERENCE DRAWINGS

DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN and Worth County, IA

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO: 22586	
APVD:	DATE:	SCALE: NONE	

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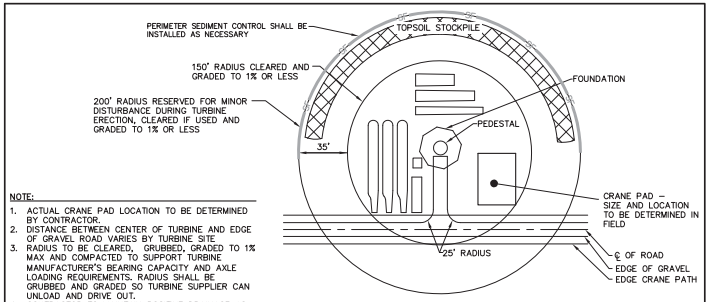
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

UNIT 0
CIVIL ACCESS ROADS
CONSTRUCTION DETAILS

NH-276086-5-3 | REV C

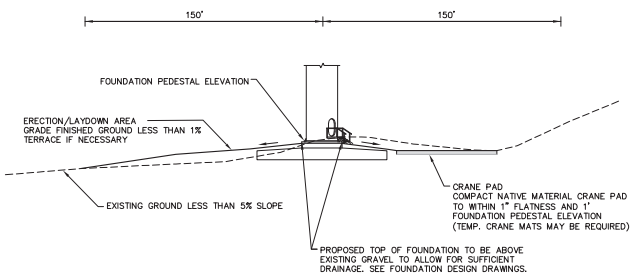
AFCL Exhibit E

Docket No. IP-6946/WS-17-410
Compliance Filing-Section 5.2.6
Attachment A
Page 158 of 221

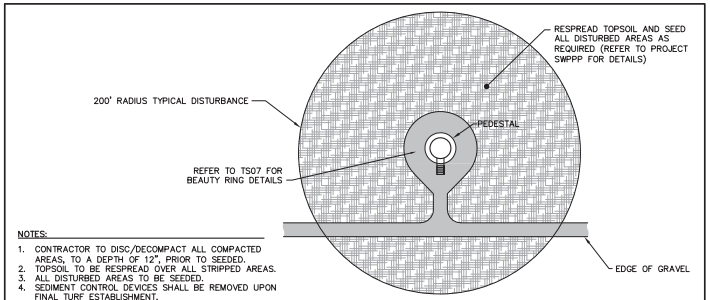


NOTE:
1. ACTUAL CRANE PAD LOCATION TO BE DETERMINED BY CONTRACTOR.
2. DISTANCE BETWEEN CENTER OF TURBINE AND EDGE OF GRAVEL ROAD VARIES BY TURBINE SITE.
3. RADIUS TO BE CLEARED, GRUBBED, GRADED TO 1% MAX AND COMPACTED TO SUPPORT TURBINE MANUFACTURER'S BEARING CAPACITY AND AXLE LOADING REQUIREMENTS. RADIUS SHALL BE GRUBBED AND GRADED SO TURBINE SUPPLIER CAN UNLOAD AND DRIVE OUT.
4. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE AS DETERMINED IN THE FIELD

TYPICAL WTG ERECTION AREA – PLAN VIEW | LAST REVISED: 11/30/17 | TS01

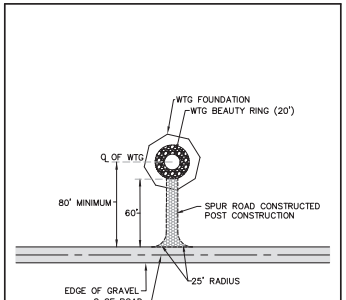


TYPICAL WTG ERECTION AREA – PROFILE VIEW | LAST REVISED: 03/15/21 | TS03

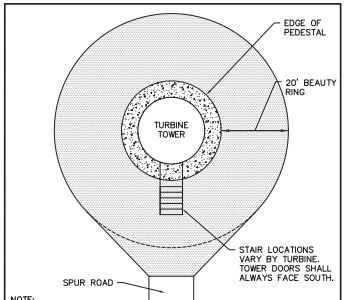


NOTES:
1. CONTRACTOR TO DISC/DECOMPACT ALL COMPACTED AREAS, TO A DEPTH OF 12", PRIOR TO SEEDED.
2. TOPSOIL TO BE RESPREAD OVER ALL STRIPPED AREAS.
3. ALL DISTURBED AREAS TO BE SEEDED.
4. SEDIMENT CONTROL DEVICES SHALL BE REMOVED UPON FINAL TURF ESTABLISHMENT.
5. DISTURBED CROPLAND MUST BE RETURNED TO A FARMABLE CONDITION.

POST–CONSTRUCTION WTG ERECTION AREA – RESTORATION | LAST REVISED: 05/23/18 | TS02

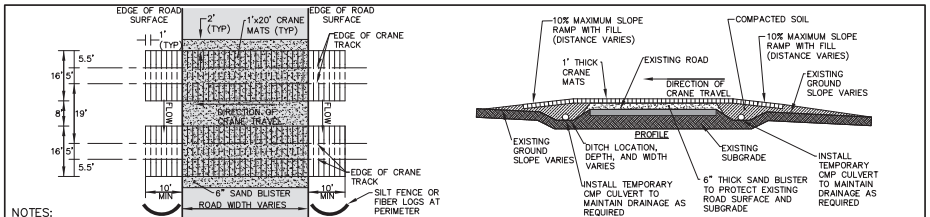


TYPICAL SPUR ROAD | LAST REVISED: 11/30/17 | TS06



NOTE:
1. REFER TO DETAIL TS05 ON SHEET NH–276086–5–2 FOR MATERIAL TYPE AND THICKNESS.

BEAUTY RING DETAIL | LAST REVISED: 06/23/15 | TS07



NOTES:
1. CRANE MATS MUST EXTEND A MINIMUM OF 10' FROM THE EDGE OF THE EXISTING ROAD SURFACE.
2. EARTH BLISTER TO BE CENTERED UNDER THE CRANE'S TRACKS AND EXTEND A MINIMUM OF 2' OUTSIDE OF THE CRANE MAT FOOTPRINT.
3. ALL DISTURBED AREA WITHIN THE PUBLIC ROW TO BE RETURNED TO EXISTING CONDITIONS.
4. ALL DISTURBED AREA TO BE RESTORED ACCORDING TO THE PROJECT SWPPP AND NARRATIVE.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY REPAIRS TO THE ROAD BASED ON DAMAGE CAUSED BY THE CRANE CROSSING.
6. PROVIDE TRAFFIC CONTROL PER THE MUTCD FOR TEMPORARY ROAD CLOSURES.
7. DIMENSIONS SHOWN ARE APPROXIMATE AND MAY CHANGE BASED ON ACTUAL CRANE UTILIZED BY CONTRACTOR.
8. ALTERNATIVE METHODS MAY BE USED FOLLOWING APPROVAL FROM OWNER.
9. CROSSING SHALL BE APPROVED BY THE LOCAL ROAD AND/OR STATE AUTHORITY PRIOR TO USE.
10. UPON REMOVAL OF CROSSING APPLY SEED AND EROSION CONTROL BLANKET TO FINAL GRADE TO RESTORE DITCHES AND SLOPES TO PRECONSTRUCTION CONDITION.

TEMPORARY CRANE CROSSING FOR EXISTING ROADS | LAST REVISED: 05/29/18 | EP01

NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN
C	90% CIVIL PLANS		9/12/19	TDD	DJN	DJN

NO	REVISION	ZONE	DATE	BY	CHK	ENG

REFERENCE DRAWINGS		
DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN and Worth County, IA

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO: 22586	
APVD:	DATE:	SCALE: NONE	

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ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

UNIT 0
CIVIL ACCESS ROADS
CONSTRUCTION DETAILS

NH-276086-5-4 | REV C

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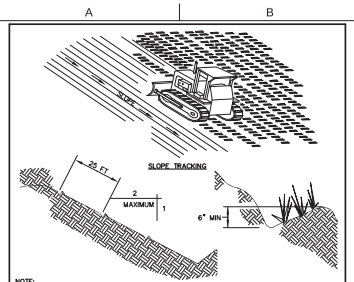
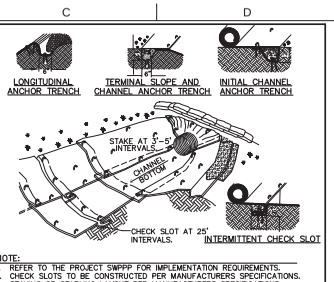
Westwood Professional Services, Inc.



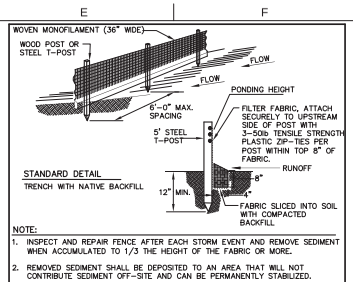
NOTE:
1. GROOVES WILL CATCH SEED, FERTILIZER, MULCH, RAINFALL AND DECREASE RUNOFF RATE.
2. USE SLOPE TRACKING FOR SLOPES 4:1 AND 50 FEET LONG OR STEEPER/LONGER.
3. USE TEMPORARY CONTOUR FURROWS FOR SLOPES 3:1 AND 75 FEET LONG OR STEEPER/LONGER.

Westwood | SURFACE ROUGHENING FOR ALL SLOPES GREATER THAN 4:1 | LAST REVISED: 03/03/08 | GD09



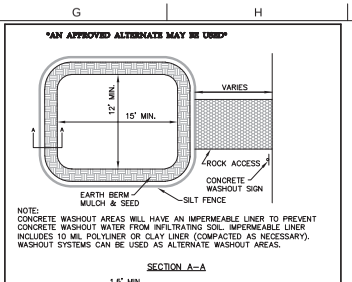
NOTE:
1. REFER TO THE PROJECT SWPPP FOR IMPLEMENTATION REQUIREMENTS.
2. CHECK SLOTS TO BE CONSTRUCTED PER MANUFACTURERS SPECIFICATIONS.
3. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.
4. MINIMUM OF 3.5 STAPLES/YARD.
5. BLANKET TYPE AND WEIGHT MUST BE CHOSEN BASED ON SITE CONDITIONS AND MANUFACTURERS RECOMMENDATIONS.
6. STAPLE LENGTHS SHALL CONFORM TO MANUFACTURERS RECOMMENDATIONS.
7. EROSION CONTROL BLANKETS SHALL EXTEND TO THE EDGE OF THE DISTURBANCE LIMITS.

Westwood | TEMPORARY EROSION BLANKETS TURF REINFORCEMENT MATS FOR CHANNELS | LAST REVISED: 03/03/08 | GD22



NOTE:
1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN ACCUMULATED TO 1/3 THE HEIGHT OF THE FABRIC OR MORE.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
4. ALL ENDS OF THE SILT FENCE SHALL BE WRAPPED UPSLOPE SO THE ELEVATION OF THE BOTTOM OF FABRIC IS HIGHER THAN "PONDING HEIGHT".

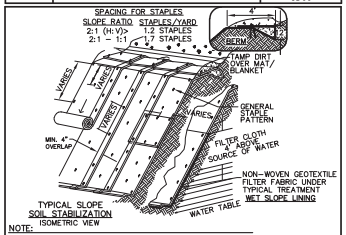
Westwood | SILT FENCE | LAST REVISED: 11/24/08 | GD03



NOTE:
CONCRETE WASHOUT AREAS WILL HAVE AN IMPERMEABLE LINER TO PREVENT CONCRETE WASHOUT WATER FROM INFILTRATING SOIL. IMPERMEABLE LINER INCLUDES 10 MIL POLYLINER OR CLAY LINER (COMPACTED AS NECESSARY). WASHOUT SYSTEMS CAN BE USED AS ALTERNATE WASHOUT AREAS.

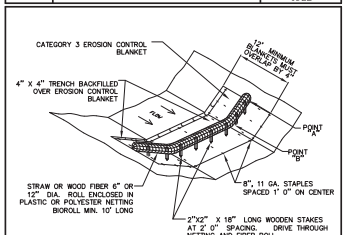
Westwood | CONCRETE WASHOUT AREA | LAST REVISED: 11/24/08 | GD08

NOTE: EROSION AND SEDIMENT CONTROL DETAILS PROVIDED ARE TO BE USED AT CONTRACTOR'S DISCRETION OR AS SPECIFIED IN THE PROJECT SWPPP. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN COMPLIANCE.



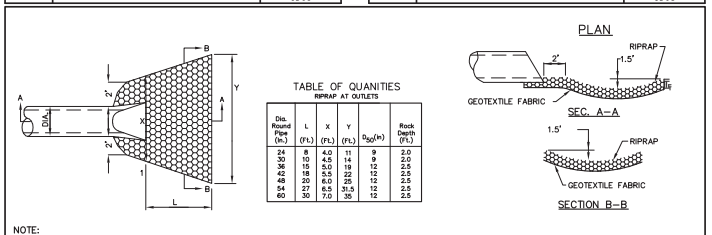
NOTE:
1. REFER TO THE PROJECT SWPPP FOR IMPLEMENTATION REQUIREMENTS.
2. MATS/BLANKETS SHOULD BE INSTALLED VERTICALLY DOWNSLOPE.
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICK AND GRASS.
4. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
5. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL.
6. DO NOT STRETCH.
7. BLANKET TYPE AND WEIGHT MUST BE CHOSEN BASED ON SITE CONDITIONS, NDDOT PERFORMANCE FACTORS AND MANUFACTURERS RECOMMENDATIONS.
8. STAPLE LENGTHS SHALL CONFORM TO MANUFACTURERS RECOMMENDATIONS.

Westwood | TYPICAL SLOPE STABILIZATION – TEMPORARY EROSION BLANKETS TURF REINFORCEMENT MATS FOR SLOPES | LAST REVISED: 5/28/13 | GD21



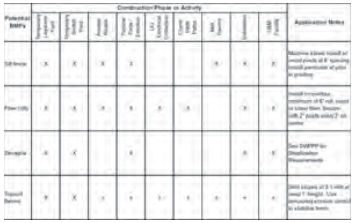
NOTE:
1. POINT "A" MUST BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

Westwood | TEMPORARY BIOROLL BLANKET SYSTEM (DITCH APPLICATION) | LAST REVISED: 03/03/08 | GD23

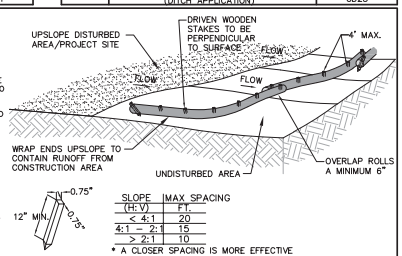


NOTE:
1. THE CONTRACTOR SHALL PLACE RIP RAP, PULVERIZED TOPSOIL, SEED AND WOODFIBER BLANKET IMMEDIATELY AFTER PIPE IS INSTALLED, EXTEND AREA TO MATCH UNDISTURBED SOIL.
2. CULVERTS LARGER THAN 60" SHALL HAVE STILLING BASINS INSTALLED.
3. RIP RAP NOT REQUIRED FOR CULVERTS 24" OR SMALLER IF CULVERTS DRAIN INTO AN UNDISTURBED VEGETATED AREA.
4. CULVERTS WITHIN THE ROW SHALL BE INSTALLED PER THE COUNTY REQUIREMENTS.
5. THE OUTLET PROTECTION SIZING RECOMMENDATION WAS TAKEN FROM HEC-14 CHAPTER 10.2 ISSUED BY THE US DEPARTMENT OF TRANSPORTATION.

Westwood | PERMANENT RIP RAP OUTLETS | LAST REVISED: 05/01/17 | ER05



NOTES:
1. FIBER ROLLS SHALL BE INSTALLED PRIOR TO UPSLOPE DISTURBANCE ACTIVITIES COMMENCE.
2. FIBER ROLLS SHALL BE PREFABRICATED AND MADE FROM WEED FREE RICE STRAW, FLAX, OR A SIMILAR AGRICULTURAL MATERIAL BOUND INTO A TIGHT TUBULAR ROLL BY NETTING. USE A 6" OR 12" DIA. ROLL.
3. TRENCHES SHALL BE CREATED ALONG THE SLOPE OF THE PERIMETER. THE TRENCH DEPTH SHOULD BE 1/4 TO 1/3 OF THE THICKNESS OF THE ROLL, AND THE WIDTH SHOULD EQUAL THE ROLL DIAMETER, IN ORDER TO PROVIDE AREA TO BACKFILL THE TRENCH.
4. STAKE FIBER ROLLS INTO THE TRENCH. DRIVE STAKES AT THE END OF EACH FIBER ROLL AND SPACED AT A FEET MAXIMUM ON CENTER. USE WOOD STAKES WITH NOMINAL CLASSIFICATION OF 0.75 IN BY 0.75 IN. AND A MINIMUM LENGTH OF 24 IN.
5. ROLLS SHALL BE INSTALLED PERPENDICULAR TO WATER MOVEMENT, AND PARALLEL TO THE SLOPE CONTOUR.
6. TURN THE ENDS OF THE FIBER ROLLS UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE ROLL. THE UPSLOPE POINT SHOULD BE A MINIMUM 6" HIGHER IN ELEVATION THAN THE LOW POINT.
7. IF MORE THAN ONE FIBER ROLL IS PLACED IN A ROW, THE ROLLS SHOULD BE OVERLAPPED A MINIMUM OF 6 INCHES, NOT ABUTTED.
8. FIBER ROLLS ENCASED WITH PLASTIC NETTING ARE USED FOR A TEMPORARY APPLICATION ONLY AND SHOULD BE REMOVED FOLLOWING STABILIZATION. FIBER ROLLS USED IN A PERMANENT APPLICATION SHALL BE ENCASED WITH A BIODEGRADABLE MATERIAL AND MAY BE LEFT IN.
9. TEMPORARY INSTALLATIONS SHOULD ONLY BE REMOVED WHEN UP GRADIENT AREAS ARE STABILIZED PER GENERAL PERMIT REQUIREMENTS, AND/OR POLLUTANT SOURCES NO LONGER PRESENT A HAZARD. BUT, THEY SHOULD ALSO BE REMOVED BEFORE VEGETATION BECOMES TOO MATURE SO THAT THE REMOVAL PROCESS DOES NOT DISTURB MORE SOIL AND VEGETATION THAN IS NECESSARY
10. FIBER ROLLS MUST BE INSPECTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS FOR THE ASSOCIATED PROJECT TYPE AND RISK LEVEL. IT IS RECOMMENDED THAT AT A MINIMUM, THE BMPS BE INSPECTED WEEKLY, PRIOR TO FORECASTED RAIN EVENTS, DAILY DURING EXTENDED RAIN EVENTS, AND AFTER THE CONCLUSION OF RAIN EVENTS.

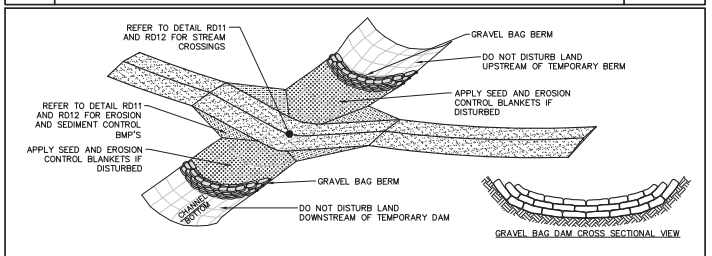


SLOPE (H:V)	MAX SPACING FT.
< 4:1	20
4:1 – 2:1	15
> 2:1	10

* A CLOSER SPACING IS MORE EFFECTIVE

12. REPAIR OR REPLACE SPLIT, TORN, UNRAVELING, OR SLUMPING FIBER ROLLS.
13. SEDIMENT THAT ACCUMULATES UPSLOPE OF THE BMP SHOULD BE PERIODICALLY REMOVED IN ORDER TO MAINTAIN BMP EFFECTIVENESS. SEDIMENT SHOULD BE REMOVED WHEN SEDIMENT ACCUMULATION REACHES ONE-THIRD THE DESIGNATED SEDIMENT STORAGE DEPTH.
14. RILLS OR GULLIES MAY BEGIN TO FORM FOLLOWING MAJOR STORM EVENTS WHERE RUNOFF HAS OVERTOPPED THE FIBER ROLLS. THESE RILLS OR GULLIES SHOULD BE PROMPTLY REPAIRED.

Westwood | TYPICAL FIBER ROLLS FOR PERIMETER CONTROL OF CONSTRUCTION AREA LIMIT | LAST REVISED: 05/09/13 | GD42



NOTE:
1. REFER TO DETAIL RD11 AND RD12 FOR STREAM CROSSINGS.
2. MINIMIZE DISTURBANCE TO THE STREAM/DITCH DURING GRAVEL BAG BERM INSTALLATION.
3. GRAVEL USED WITHIN THE BAGS SHALL BE PEA ROCK.
4. GRAVEL BAG BERMS SHALL SPAN LATERALLY ACROSS THE STREAM FROM TOP OF BANK TO TOP OF BANK.
5. UPON CRANE TRAVEL COMPLETION, REMOVE GRAVEL BAG BERM AND RESTORE TO ORIGINAL CONDITION.
6. GRAVEL BAG BERMS MAY BE NECESSARY IF FLOWS AND DRAINAGE AREAS REQUIRE.

Westwood | TEMPORARY GRAVEL BAG BERM AT DRAINAGE CROSSING LOCATIONS | LAST REVISED: 7/19/12 | RD13

NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN
C	90% CIVIL PLANS		9/12/19	TDD	DJN	DJN

NO	REVISION	ZONE	DATE	BY	CHK	ENG

REFERENCE DRAWINGS

DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN and Worth County, IA

DWN: TDD	DATE:	CHK:	DATE:
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NH-276086-6 | REV C

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Westwood Professional Services, Inc.

ROAD DESIGN PARAMETERS

1. ACCESS ROADS HAVE BEEN DESIGNED TO ACCOMMODATE LIGHT DUTY TRUCKS (PICKUP TRUCKS AND MAINTENANCE VEHICLES) FOR LOW VOLUME USE IN NORMAL OPERATING CONDITIONS AS WELL AS HEAVY DUTY CONSTRUCTION TRAFFIC UNDER DRY CONDITIONS. THE ROAD DESIGN SPECIFIED IS NOT INTENDED FOR ALL WEATHER USE FOR HEAVY DUTY CONSTRUCTION LOADS.
2. ROAD MAINTENANCE CAN BE EXPECTED OVER THE LIFE OF THE PERMANENT FACILITY.
3. ACCESS ROADS HAVE BEEN DESIGNED IN ACCORDANCE TO VESTAS SITE ROADS AND CRANE HARD STANDINGS SPECIFICATION.

PRODUCTS

1. AGGREGATE BASE FOR PERMANENT APPLICATIONS SHALL CONSIST OF MNDOT CLASS 5Q AGGREGATE BASE COURSE (AND IN CONFORMANCE WITH THE GRADATION TABLE 1). AGGREGATE GRADATIONS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW.
2. ROAD SHOULDERS AND CRANE PADS SHALL CONSIST OF COMPACTED NATIVE SOILS.
3. CULVERTS: ACCESS ROAD CULVERTS IN MINNESOTA SHALL MEET THE MINIMUM SPECIFICATIONS SET FORTH BY THE MINNESOTA DEPARTMENT OF TRANSPORTATION AND/OR FREEBORN COUNTY. ACCESS ROAD CULVERTS IN IOWA SHALL MEET THE MINIMUM SPECIFICATIONS SET FORTH BY THE IOWA DEPARTMENT OF TRANSPORTATION AND/OR WORTH COUNTY. ALL CULVERTS ARE PLANNED TO BE A MINIMUM 18" DIAMETER AND MANUFACTURED OF 16-GAGE CORRUGATED METAL PIPE OR HDPE WITH NO END TREATMENTS UNLESS NOTED OTHERWISE. ACTUAL SIZE WILL BE DETERMINED THROUGH HYDRAULIC ANALYSIS.
4. GEOTEXTILE FABRIC: MIRAFI HP270 OR APPROVED EQUAL.
5. FILL PLACEMENT: NATIVE SOIL USED TO CONSTRUCT FILL PLACEMENT BELOW ROADS, CRANE WALKS, LAYDOWN YARD AND WTG ERECTION AREAS.

EXECUTION

1. CLEARING AND GRUBBING
   A. THE CONTRACTOR SHALL BE REQUIRED TO GRUB ALL TREES, STUMPS, BRUSH, AND DEBRIS WITHIN THE GRADING AREAS SHOWN ON THE PLANS. GRUBBING INCLUDES REMOVAL OF ALL PLANT MATERIAL GREATER THAN 2" INCLUDING STUMPS, BRANCHES, ROOTS, ETC. TO A DEPTH BELOW THE FINAL SUBGRADE. THE CONTRACTOR IS TO REMOVE ONLY THOSE TREES WHICH ARE DESIGNATED BY THE OWNER'S REPRESENTATIVE FOR REMOVAL, AND SHALL EXERCISE EXTREME CARE AROUND EXISTING TREES TO BE SAVED.
2. TOPSOIL STRIPPING
   A. TOPSOIL, INCLUDING ROOTS LARGER THAN 2" AND LARGE ROOT MASSES, SHALL BE STRIPPED FROM ALL ROADWAY AND FOUNDATION AREAS UP TO 8". TOPSOIL SHALL NOT BE STRIPPED OUTSIDE OF THE DESIGNATED DISTURBANCE AREAS.
   B. ANY TOPSOIL THAT HAS BEEN STRIPPED SHALL BE STOCKPILED FOR POST CONSTRUCTION REVEGETATION. ALL TOPSOIL SHALL BE REDISTRIBUTED TO THE LAND OWNER'S PROPERTY OF WHERE IT ORIGINATED FROM.
3. FILL PLACEMENT
   A. FILL PLACEMENT SHALL CONSIST OF THE PLACING OF SUITABLE FILL MATERIAL, AFTER TOPSOIL STRIPPING, ABOVE THE EXISTING GRADE. GENERALLY, SIDE SLOPES SHALL BE CONSTRUCTED AT FOUR FOOT HORIZONTAL TO ONE FOOT VERTICAL, WITH SOME LOCATIONS THROUGHOUT THE PROJECT WITH SLOPES OF TWO FEET HORIZONTAL TO ONE FOOT VERTICAL. THE MATERIAL FOR FILL CONSTRUCTION SHALL BE OBTAINED FROM THE ACCESS ROAD/TURBINE EXCAVATION (SEE GEOTECHNICAL REPORT FOR RESTRICTIONS), OR ANY SUITABLE, APPROVED SOIL OBTAINED ONSITE/OFFSITE BY CONTRACTOR, AS DIRECTED OR APPROVED BY THE ENGINEER. THIS MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 12" AND CONSTRUCTED TO 95% OF THE MAXIMUM DRY DENSITY AND WITHIN 3% OF OPTIMUM MOISTURE CONTENT, AS DETERMINED BY THE STANDARD PROCTOR (AASHTO T99).
   B. SIDE SLOPES GREATER THAN 4:1 WILL NOT BE PERMITTED, UNLESS OTHERWISE NOTED ON THE PLAN.
   C. FILL SLOPES SHALL BE BENCHED INTO THE EXISTING SLOPE TO PREVENT MOVEMENT BETWEEN THE FILL AND NATIVE SOILS. BENCHES SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO FILL PLACEMENT. POSITIVE DRAINAGE IS REQUIRED AT BENCHED AREAS AND AT THE TOE OF FILL SLOPES TO REMOVE SURFACE WATER.
4. SUBGRADE
   A. SUBGRADE PREPARED AT GRADE OR IN CUT REQUIRES SCARIFICATION AND RECOMPACTION TO A DEPTH OF 12" OR MORE.
   B. ACCESS ROAD CROSS SLOPES SHOWN IN THE PLANS ARE MEANT AS A GUIDE. ACCESS ROAD CROSS SLOPES MAY RANGE FROM 1% – 4%. CHECK WITH THE ENGINEER IF THE CROSS SLOPE FALLS OUTSIDE OF THIS RANGE. ACCESS ROADS BEING UTILIZED FOR CRANE TRAVEL SHOULD HAVE A MAX CROSS SLOPE OF 2%.

STORM WATER DESIGN PARAMETERS

1. SEE SHEET NH-276086-2 FOR CULVERT SIZING AND DESIGN PARAMETERS. CULVERTS SHALL BE MINIMUM 18" CORRUGATED METAL PIPE. ALL TEMPORARY PORTIONS OF THE INSTALLED CULVERTS SHALL BE REMOVED UPON COMPLETION OF THE PROJECT.
2. IT IS EXPECTED THAT CULVERTS WILL BE OVERTOPPED DURING SOME STORMS AND MAINTENANCE WILL BE REQUIRED THROUGH THE LIFE OF THE PROJECT.
3. WHEN INSTALLING DRAINAGE CULVERTS THE CONTRACTOR SHALL USE JUDGMENT IN SETTING THE FLOW LINE ELEVATIONS AND CULVERT LONGITUDINAL SLOPE. TYPICALLY THE FLOW LINE ELEVATIONS AND LONGITUDINAL SLOPE OF THE CULVERT SHOULD MATCH THE NATURAL GROUND ELEVATIONS AND SLOPE TO ENSURE POSITIVE DRAINAGE. WHEN POSSIBLE, ALL CULVERTS SHOULD BE PLACED AT A MINIMUM 0.5% GRADE.
4. ANTICIPATED CULVERT CROSSINGS ARE SHOWN ON THE CONSTRUCTION PLAN, ADDITIONAL CULVERTS MAY NEED TO BE INSTALLED IN AREAS WHERE CONCENTRATED FLOW IS EXPECTED DUE TO CONSTRUCTION ACTIVITIES.
5. CONSTRUCTION DRAINAGE CROSSINGS TO MAINTAIN EXISTING FLOW CHARACTERISTICS OF THE FEATURES. FEATURES SHALL BE GRADED TO PRECONSTRUCTION CONTOURS.

TABLE 1: MNDOT AGGREGATE BASE COURSE – LOCALLY SOURCED

SIEVE SIZE	PERCENT PASSING
1"	100
3/4"	80–100
1/2"	68–91
NO. 4	46–70
NO. 8	34–58
NO. 40	13–35
NO. 200	3–12

MEET FOLLOWING REQUIREMENTS PER 882.2

LIQUID LIMIT (MAX) = 25
PLASTICITY INDEX = 0–6
L.A ABRASION (% MAX) = 40%

GRADATION HAS BEEN OBTAINED FROM THE 2015 MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION BOOK.

TESTING:

1. TESTING SHALL BE PERFORMED BY A DESIGNATED INDEPENDENT TESTING AGENCY.
2. SUBMIT ONE SET OF TESTING AND INSPECTION RECORDS SPECIFIED TO THE CIVIL ENGINEER OF RECORD.

DEFINITIONS:

1. PROOF ROLLING:
   SHALL BE PERFORMED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER OR QUALIFIED GEOTECHNICAL REPRESENTATIVE USING A FULLY LOADED TANDEM AXLE DUMP TRUCK OR WATER TRUCK WITH A MINIMUM GROSS WEIGHT OF 25 TONS OR A FULLY LOADED BELLY DUMP WITH AN EQUIVALENT AXLE LOADING. PROOF-ROLLING ACCEPTANCE STANDARDS INCLUDE NO RUTTING GREATER THAN 1.5 INCHES, AND NO "PUMPING" OF THE SOIL BEHIND THE LOADED TRUCK.
2. SIEVE ANALYSIS:
   SHALL BE CONDUCTED IN ACCORDANCE WITH AASHTO T27
3. PROCTORS:
   SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T99
4. ATTERBERG LIMITS:
   SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T89 AND T90
5. MOISTURE DENSITY (NUCLEAR DENSITY):
   SHALL BE DONE IN ACCORDANCE WITH AASHTO T310
6. DYNAMIC CONE PENETROMETER (DCP) TESTING:
   SHALL BE DONE IN ACCORDANCE WITH ASTM D6951-03

REQUIREMENTS:

1. FILL PLACEMENT:
   A. SOILS USED AS FILL MATERIAL SHALL BE TESTED FOR MOISTURE CONTENT AND PROCTOR TESTS.
   B. WHERE FILL CONSTRUCTION REQUIRES MORE THAN 12 INCHES OF FILL PLACEMENT, COMPACT EACH LIFT TO A MINIMUM OF 95 PERCENT OF THE MATERIAL'S MAXIMUM STANDARD PROCTOR DRY DENSITY.
2. COMPACTED SUBGRADE (CEMENT STABILIZED):
   A. SEE SHEET NH-276086-7-2 FOR TESTING REQUIREMENTS AND PROCEDURE.
3. COMPACTED SUBGRADE (NON-CEMENT STABILIZED):
   A. THE ENTIRE SUBGRADE SHALL BE PROOF-ROLLED PRIOR TO THE PLACEMENT OF THE AGGREGATE BASE TO IDENTIFY AREAS OF UNSTABLE SUBGRADE.
   B. IF A PASSING PROOF-ROLL CANNOT BE ACHIEVED THE FOLLOWING ALTERNATIVES MAY BE IMPLEMENTED:
      a. SCARIFY, DRY, AND RECOMPACT SUBGRADE
      b. REMOVE UNSUITABLE MATERIAL AND REPLACE WITH SUITABLE MATERIAL
      c. INCREASE AGGREGATE BASE THICKNESS
      d. USE AN APPROVED GEOTEXTILE FABRIC
4. AGGREGATE BASE:
   A. AGGREGATE BASE SHALL BE PROOF-ROLLED OVER THE ENTIRE LENGTH. IF PROOF ROLLING DETERMINES THAT THE ROAD IS UNSTABLE, ADDITIONAL AGGREGATE SHALL BE ADDED UNTIL THE UNSTABLE SECTION IS ABLE TO PASS A PROOF ROLL.
   B. PROVIDE 1 SIEVE ANALYSIS (PROJECT MAX OF 20) PER 2500 CY OF ROAD BASE PLACED.
5. CRANE PADS AND CRANE PATHS:
   A. CRANE PAD TESTING REQUIREMENTS ARE PENDING BASED ON CANE PICK PLANS PROVIDED BY THE CONTRACTOR.
   B. CRANE PATHS ARE BASED ON CONTRACTORS MEANS AND METHODS.

TABLE 2: TESTING SCHEDULE SUMMARY

LOCATION	TEST	FREQUENCY
FILL PLACEMENT	PROCTOR	1 PER MAJOR SOIL TYPE
	MOISTURE DENSITY TEST (NUCLEAR DENSITY)	1 PER LIFT PER 5000 SF OF FILL PLACED OR 1 PER 500 LF OF ROAD OR CRANE WALK
COMPACTED SUBGRADE (CEMENT STABILIZED):	SEE SHEET NH-276086-7-2	SEE SHEET NH-276086-7-2
COMPACTED SUBGRADE (NON-CEMENT STABILIZED):	PROOF-ROLL	ENTIRE AREA
AGGREGATE BASE	PROOF-ROLL	ENTIRE AREA
	SIEVE ANALYSIS, LL, PL, AND L.A ABRASION	1 PER 2,500 CY

GENERAL NOTES:

1. THE GROUND SURFACE CONTOURS (AT TWO-FOOT VERTICAL INTERVALS) AND ELEVATIONS ARE BASED ON LIDAR DATA OBTAINED FROM THE PUBLIC DATA SETS FROM THE STATES OF MN AND IA. THE ELEVATIONS AND CONTOURS BASED ON THE LIDAR DATA WERE PREPARED FROM AERIAL PHOTOGRAPHY DATA, AND NOT ACTUAL FIELD SURVEYING. AS SUCH, THE ACCURACY OF THE ELEVATIONS AND CONTOURS IS NOT AS HIGH AS INFORMATION GATHERED USING CONVENTIONAL FIELD SURVEYING PROCEDURES. THE CONTRACTOR MAY FIND THAT GROUND ELEVATIONS DETERMINED DURING FIELD STAKING WILL VARY FROM THE GROUND ELEVATIONS SHOWN ON THE DRAWINGS. IF MAJOR DISCREPANCIES ARE FOUND, THE OWNER AND ENGINEER SHALL BE NOTIFIED.
2. WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED, THE OWNER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKERS AND MONUMENTS UNTIL THE OWNER, AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION.
3. EFFORTS SHALL BE MADE TO MINIMIZE SOIL DISTURBANCE TO AREAS OUTSIDE OF THE ROAD GRADING LIMITS, CRANE PATHS, AND TURBINE SITES.
4. FINALIZE GRADING AROUND THE BASE OF TURBINES IN ACCORDANCE WITH DETAIL TS-03 AND TS-04.
5. GRADE ALL PROPOSED ROADS TO A MAXIMUM SLOPE OF 8%. IF 8% SLOPE CANNOT BE ACHIEVED, THE CONTRACTOR MAY UTILIZE ASSIST VEHICLES FOR THE PURPOSE OF DELIVERIES. GRADE ALL PROPOSED CRANE PATHS TO A MAXIMUM OF 8% UNLESS OTHERWISE NOTED IN PLAN SHEETS.
6. ANY FACILITIES REMOVED TO ALLOW FOR CONSTRUCTION (MAILBOXES, SIGNS, FENCES, ETC.) SHALL BE REPLACED BY THE CONTRACTOR IN A CONDITION AS GOOD AS EXISTING.
7. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING DRAINAGE THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONSTRUCTION ACTIVITIES SHALL NOT BLOCK THE NATURAL OR MANMADE CREEKS OR DRAINAGE SWALES CAUSING RAINWATER TO POND. DEPENDING ON FIELD CONDITIONS, ADDITIONAL CULVERTS IN EXCESS OF THOSE ON THE PLANS MAY BE REQUIRED.
8. WHILE BUILDING THE ROADS AND EXCAVATING THE TURBINE FOUNDATIONS, EXCESS SOIL WILL RESULT. THE CONTRACTOR SHALL DISPOSE OF THIS EXCESS SOIL IN AN APPROVED MANNER. EXCESS TOPSOIL SHALL BE DISTRIBUTED INTO A THIN LAYER ON LAND IMMEDIATELY ADJACENT TO WHERE THE TOPSOIL ORIGINATED. ALL EXCESS TOPSOIL TO BE WASTED ONSITE. WHILE DOING SO THE CONTRACTOR SHALL AVOID CAUSING RIDGES OR MOUNDS THAT WOULD MAKE IT DIFFICULT FOR STORM WATER RUNOFF TO DRAIN. THE FINAL SURFACE OF THE DISTURBED TOPSOIL SHALL BE SMOOTH AND FOLLOW THE NATURAL CONTOUR OF THE LAND.
9. THE CONTRACTOR SHALL NOTIFY MINNESOTA/IOWA 811 AT LEAST 48 HOURS BEFORE EXCAVATION ACTIVITIES COMMENCE.
10. TEMPORARY INTERSECTION WIDENING SHALL, UPON COMPLETION OF ALL PROJECT CONSTRUCTION OR UPON NOTIFICATION OF THE ENGINEER, BE REMOVED AND THE AREA RESTORED TO ITS ORIGINAL LINES AND GRADES WITH TOPSOIL REPLACED, EXCEPT WHERE REQUESTED BY THE TOWNSHIP OR COUNTY TO PERMANENTLY REMAIN. DISTURBED AREAS OUTSIDE OF THE FINAL ROADWAY SHALL BE SEEDED AND MULCHED.
11. TURBINE SETBACKS ARE NOT IDENTIFIED ON THE CONSTRUCTION PLANS. IT SHALL BE THE RESPONSIBILITY OF THE OWNER AND CONTRACTOR TO ENSURE THAT ALL TURBINE SETBACKS MEET PROJECT REQUIREMENTS.
12. GEOTECHNICAL REPORTS WITH RECOMMENDATIONS HAVE BEEN PREPARED BY THE OWNER. ALL GRADING SHALL CONFORM TO THE GEOTECHNICAL ENGINEERING REPORT AND RECOMMENDATIONS.
13. FIELD SURVEY WETLAND INFORMATION HAS BEEN PROVIDED BY THE OWNER. ALL WETLAND DELINEATIONS AND PERMITTING SHALL BE THE RESPONSIBILITY OF OTHERS AND BE COMPLETED PRIOR TO CONSTRUCTION COMMENCING. THE OWNER AND GENERAL CONTRACTOR SHALL VERIFY THAT ALL WETLAND PERMITS HAVE BEEN SUBMITTED AND APPROVED PRIOR TO CONSTRUCTION COMMENCING.
14. CULTURAL RESOURCE REPORTS HAVE NOT BEEN PROVIDED BY THE OWNER. CULTURAL RESOURCE LOCATIONS ARE NOT SHOWN ON THE PLANS. INFORMATION WILL BE THE RESPONSIBILITY OF THE OWNER AND GENERAL CONTRACTOR. THE LOCATIONS OF CULTURAL RESOURCE SITES MAY BE CONFIDENTIAL AND PROTECTED BY STATE OR FEDERAL LAW. PUBLIC RELEASE OF SPECIFIC INFORMATION REGARDING THESE RESOURCES MAY BE RESTRICTED.
15. AN ENVIRONMENTAL ASSESSMENT HAS NOT BEEN PROVIDED. THE CONTRACTOR SHALL BE FAMILIAR WITH THE REPORT AND REVIEW ALL RECOMMENDATIONS.
16. ELECTRICAL INFORMATION SHOWN ON THE PLANS IS FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSULTANT'S PLANS FOR SPECIFIC LOCATIONS AND CONSTRUCTION DETAILS FOR THE UNDERGROUND POWER COLLECTION SYSTEM AND SUBSTATION.
17. CRANE PATHS ARE SHOWN ON THE CONSTRUCTION PLANS. IF THE CONTRACTOR PROPOSES ALTERNATE CRANE PATHS, THEY SHALL ENSURE THAT WETLAND AND CULTURAL RESOURCE CORRIDORS ARE NOT DISTURBED. FINAL CRANE PATH ALIGNMENTS SHALL BE DETERMINED BY THE CONTRACTOR BASED ON FIELD CONDITIONS WITHIN THE WETLAND AND CULTURAL RESOURCE CORRIDORS, SPECIAL LANDOWNER AGREEMENTS AND THE PROJECT BOUNDARY.
18. EFFORTS SHALL BE MADE TO MINIMIZE SOIL DISTURBANCE. CONSTRUCTION DISTURBANCE MUST STAY WITHIN THE CLEARED CONSTRUCTION CORRIDOR. OWNER MUST APPROVE ANY DISTURBANCE BEYOND THE CLEARED CORRIDOR. THE TYPICAL CLEARED CORRIDOR IS 100 LF WIDTH FOR PROPOSED ACCESS ROADS, 100 LF FOR CRANE PATHS, AND 250 LF FOR TURBINES. DURING ERECTION OF THE ROTOR, TRUCKS AND/OR FORKLIFTS MAY EXTEND BEYOND THE LIMITS WITH APPROVAL. SEE DETAIL TS01 FOR TYPICAL ERECTION AREAS.
19. TRUCK TURNAROUNDS ARE NOT SHOWN ON THE PLANS. GENERAL CONTRACTOR TO COORDINATE AND ASSIST WITH TRUCK TURNAROUNDS WHERE NECESSARY.
20. AN ALTA SURVEY HAS NOT BEEN PROVIDED BY THE OWNER. CONTRACTOR AND OWNER ARE RESPONSIBLE FOR LOCATING ALL UTILITIES AND VERIFYING LOCATION OF CONSTRUCTION ACTIVITIES PRIOR TO COMMENCING WORK. ALL UTILITIES MAY NOT BE SHOWN.
21. OFF SITE TEMPORARY INTERSECTION IMPROVEMENTS ARE NOT SHOWN ON THE PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATIONS AND CONSTRUCTION REQUIREMENTS.
22. IMPACTS TO PUBLIC AND PRIVATE DRAIN TILE ARE EXPECTED. CONTRACTOR AND OWNER TO AGREE UPON DRAIN TILE REPAIR PRIOR TO REPAIRS.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

1. THE CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES AS PLANNED AND SPECIFIED FOLLOWING BEST MANAGEMENT PRACTICES AS OUTLINED BY THE MINNESOTA DEPARTMENT OF HEALTH, THE IOWA DEPARTMENT OF NATURAL RESOURCES, AND BEING IN CONFORMANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL STORMWATER PERMIT.
2. REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE FREEBORN WIND PROJECT, PREPARED BY WESTWOOD PROFESSIONAL SERVICES, FOR EROSION CONTROL AND RESTORATION SPECIFICATIONS, SEDIMENT AND EROSION CONTROL PROCEDURES, LOCATIONS OF BMPs, DETAILS, AND INSPECTION INFORMATION.
3. ALL PASTURES AND DRAINAGE SWALES DISTURBED DURING CONSTRUCTION ACTIVITIES AND NOT COVERED BY ROAD SURFACING MATERIALS, SHALL BE SEEDED IN ACCORDANCE WITH THE SWPP PLAN.
4. TEMPORARY EROSION CONTROL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE TEMPORARY EROSION CONTROL PLAN SHALL BE IN ACCORDANCE WITH THE MINNESOTA DEPARTMENT OF HEALTH, THE IOWA DEPARTMENT OF NATURAL RESOURCES, AND THE FREEBORN WIND PROJECT STORMWATER POLLUTION PREVENTION PLAN ON FILE.

PROJECT CONTACT INFORMATION:

TITLE	COMPANY	NAME	CONTACT NUMBER
OWNER	XCEL ENERGY		
PROJECT MANAGER	WESTWOOD PROFESSIONAL SERVICES	DANI NYGREN	952-906-7493
ENGINEER OF RECORD	WESTWOOD PROFESSIONAL SERVICES	ROB COPOULS	952-906-7470
CONTRACTOR	WANZEK	BRENDON LAMPPA	701-492-1315

Westwood
Phone (952) 937-5150 12701 Whitewater Dr
Fax (952) 937-5822 Minnetonka, MN 55343
Toll Free (888) 937-5150 www.westwoodps.com
Westwood Professional Services, Inc

NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN
C	90% CIVIL PLANS		9/12/19	TDD	DJN	DJN

NO	REVISION	ZONE	DATE	BY	CHK	ENG

REFERENCE DRAWINGS		
DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN and Worth County, IA

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO: 22586	
APVD:	DATE:	SCALE: NONE	

THIS MYDOCUMENT 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 AND MANUALS.

ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

UNIT 0
CIVIL ACCESS ROADS
CONSTRUCTION NOTES

NH-276086-7-1

REV C

AFCL Exhibit E

Docket No. IP-6946/WS-17-410
Compliance Filing-Section 5.2.6
Attachment A
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CEMENT STABILIZATION - PROCEDURE

THE SPECIFICATIONS BELOW ARE GENERAL RECOMMENDATIONS/GUIDELINES FOR CEMENT STABILIZATION OF SUBGRADES FOR THE PROJECT. ACTUAL FIELD CONDITIONS MAY ALTER APPLICATION RATE. CONSULT GEOTECHNICAL ENGINEER FOR FURTHER RECOMMENDATIONS.

1. STRIP THE TOP ±4 INCHES OF TOPSOIL (THROUGH THE ROOT ZONE) FROM THE AREA TO BE STABILIZED. ROOTS SMALLER THAN 1/4" DIAMETER ARE CONSIDERED INSIGNIFICANT.
2. PERFORM A PROCTOR (ASTM D 698) TEST TO DETERMINE THE OPTIMUM MOISTURE CONTENT IF THE MATERIAL TO BE STABILIZED DOES NOT MATCH A PREVIOUSLY PERFORMED PROCTOR.
3. DETERMINE THE IN-SITU MOISTURE CONTENT USING A NUCLEAR DENSITY GAUGE (OR EQUIVALENT MOISTURE CONTENT TEST) DAILY, PRIOR TO INCORPORATION OF THE CEMENT. PROVIDE ADDITIONAL MOISTURE CONTENT TESTING AS NEEDED BASED ON WEATHER CONDITIONS.
   - 3.1. THE CONTRACTOR WILL BE ADVISED OF IN-SITU MOISTURE CONTENT, AND MOISTURE ADJUSTMENTS SHOULD BE MADE IF IN-SITU MOISTURE IS LESS THAN OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE PROCTOR (ASTM D 698).
4. SOIL AND CEMENT BLENDING:
   - 4.1. COMPLETELY BLEND SUBGRADE SOIL WITH THE APPROPRIATE AMOUNT OF CEMENT BY WEIGHT. FIELD RESULTS FROM TEST STRIPS WILL DICTATE THE CEMENT APPLICATION RATE.
   - 4.2. IN AREAS OF HIGH MOISTURE OR POOR SOILS, THE CONTRACTOR MAY INCREASE THE PERCENT OF CEMENT IN ORDER TO MEET THE MINIMUM SUBGRADE STRENGTH REQUIREMENTS.
   - 4.3. THE USE OF A RECLAIMER IS AN ADEQUATE BLENDING METHOD. DISCING IS NOT AN ADEQUATE BLENDING METHOD.
   - 4.4. A STABILIZATION DEPTH OF 12" WAS USED FOR DESIGN PURPOSES. STABILIZATION DEPTH MAY NEED TO INCREASE TO 16" IN AREAS OF EXTREME MOISTURE OR POOR SOILS IN ORDER TO MEET THE STRENGTH AND PROOF ROLL REQUIREMENTS.
5. COMPACTION:
   - 5.1. A ROLLING PATTERN WILL BE ESTABLISHED USING A NUCLEAR DENSITY GAUGE DURING COMPACTION.
     - 5.1.1. COMPACTION WILL BE PERFORMED UNTIL THE STABILIZED MATERIAL REACHES THE "BREAK POINT" AFTER WHICH ADDITIONAL PASSES WITH A ROLLER RESULTS IN A LOSS OF DENSITY AS MEASURED BY A NUCLEAR DENSITY GAUGE.
     - 5.1.2. COMPACTION IS TYPICALLY ACHIEVED BY MULTIPLE PASSES OF A PADFOOT ROLLER UNTIL THE ROLLER "WALKS" OUT OF THE RECLAIMED MATERIAL (SPACE IS VISIBLE BETWEEN THE DRUM AND THE RECLAIMED MATERIAL). THIS IS FOLLOWED BY BLADING AND SHAPING THE RECLAIMED MATERIAL TO FINAL PROFILE AND CROSS SECTION, REMOVING HIGH AND LOW POINTS. SMOOTH DRUM OR RUBBER TIRE ROLLERS ARE THEN USED TO FINISH ROLLING (THIS IS WHEN THE DENSITY TESTS ARE PERFORMED) UNTIL THE DENSITY OF THE MATERIAL REACHES THE "BREAK POINT."
     - 5.1.3. THE NUMBER OF PASSES AND EQUIPMENT USED TO REACH THE "BREAK POINT" IS CONSIDERED THE ROLLING PATTERN.
     - 5.1.4. ONCE THE ROLLING PATTERN HAS BEEN CONFIRMED IT IS RECOMMENDED THAT TESTING CONTINUE AT 1 TEST PER 1,000 LF IN EACH PASS OF THE RECLAIMER.
     - 5.1.5. A NEW ROLLING PATTERN MAY NEED TO BE ESTABLISHED IF THE PERFORMANCE REQUIREMENTS ARE NOT BEING MET. THIS MAY BE DUE TO CHANGES IN THE MOISTURE CONTENT, THE SOIL TYPE, OR THE CEMENT RATE.
     - 5.1.6. IF IT IS NOT POSSIBLE TO ATTAIN THE TARGET DENSITY, AND ADDITIONAL COMPACTION DOES NOT IMPROVE THE DENSITY, A NEW ROLLING PATTERN SHOULD BE ESTABLISHED.
   - 5.2. THE AIR TEMPERATURE SHALL BE ABOVE 40 DEGREES (F) DURING THE CEMENT STABILIZATION PROCESS. MIXING CEMENT INTO FROZEN GROUND IS NOT ACCEPTABLE.
6. THE STABILIZED MATERIAL SHALL BE CONTINUOUSLY WET CURED FOR A MINIMUM OF 24 HOURS (WET CURED IS IDENTIFIED VISUALLY AS DAMP SURFACE).
7. PERFORM SUBGRADE TESTING IN ACCORDANCE WITH TESTING SCHEDULE.
8. AGGREGATE PLACEMENT:
   - 8.1. SURFACE AGGREGATE SHALL BE PLACED OVER THE STABILIZED SUBGRADE FOLLOWING PASSING PROOF-ROLL TESTS.
   - 8.2. THE AGGREGATE SURFACING IS INTENDED TO PROTECT THE SUBGRADE FROM WATER BEING PUMPED INTO THE SUBGRADE AND TO PROVIDE A TRACTION COURSE. WESTWOOD RECOMMENDS A MINIMUM OF 4 INCHES OF AGGREGATE INITIALLY PLACED OVER STABILIZED SUBGRADE. MAINTENANCE IS REQUIRED THROUGHOUT CONSTRUCTION AND MAY REQUIRE THE PLACEMENT OF ADDITIONAL AGGREGATE.
   - 8.3. REFER TO THE TESTING SCHEDULE FOR AGGREGATE PLACEMENT CRITERIA.

CEMENT STABILIZATION - DESIGN BASIS

1. DURING INITIAL CONSTRUCTION, CONTRACTOR SHALL CONSTRUCT MINIMUM 300 LF TEST STRIPS CONTAINING 5%, 6% AND 7% CEMENT IN ACCORDANCE WITH CEMENT STABILIZATION PROCEDURES.
2. SUBGRADE DCP TESTING AND ACCEPTANCE (SEE TABLE 3 FOR ANTICIPATED RESULTS):
   - 2.1. PERFORM INITIAL SUBGRADE STRENGTH TESTING BY DYNAMIC CONE PENETROMETER (DCP) PER ASTM D 6951/6951M BETWEEN 4 TO 6 HOURS AFTER FINAL COMPACTION.
   - 2.2. PERFORM ADDITIONAL DCP TESTING AT 24 AND 48 HOURS AFTER FINAL COMPACTION.
   - 2.3. PERFORM SUBSEQUENT DCP TESTS AT 7 DAYS AFTER FINAL COMPACTION AS VERIFICATION OF STRENGTH CURVE.
   - 2.4. A MINIMUM OF 3 TESTS PER TEST SECTION PER TIMEFRAME IS REQUIRED. TESTS SHALL BE TAKEN AT THE CENTERLINE AND 2' FROM EACH SHOULDER.
   - 2.5. RECORD DCP TEST RESULTS EVERY 6 INCHES TO TOTAL DEPTH OF 12 INCHES.

TABLE 3: TEST STRIP CBR/DCP REQUIREMENTS TABLE

TIME ELAPSED BETWEEN FINAL COMPACTION AND DCP TEST	REQUIRED MINIMUM CBR	MINIMUM DCP (BLOWS PER 6")	COMPRESSIVE STRENGTH (PSF)
4 – 6 HOURS	6	5	1,800
24 HOURS	10	7	2,500
48 HOURS	15	10	3,200
7 DAYS	30	21	5,200

CEMENT STABILIZATION - PRODUCTION

1. SUBGRADE DCP TESTING AND ACCEPTANCE (SEE TABLE 5 FOR SUMMARY OF TESTING REQUIREMENTS):
   - 1.1. PERFORM SUBGRADE STRENGTH TESTING BY DYNAMIC CONE PENETROMETER (DCP) PER ASTM D 6951/6951M NO SOONER THAN 24 HOURS AFTER FINAL COMPACTION.
   - 1.2. DCP TESTING FREQUENCY SHALL BE WITH A RANDOM SPACING AND A MINIMUM OF 1 TEST PER 500 LF IN EACH PASS OF THE RECLAIMER. A MINIMUM OF 3 TESTS PER ROAD IS REQUIRED.
   - 1.3. THE CBR OF THE STABILIZED SUBGRADE SHOULD BE CALCULATED IN 6" INCREMENTS THROUGH THE ENTIRE DEPTH OF THE STABILIZED LAYER.
   - 1.4. THE MINIMUM REQUIRED CBR PRIOR TO PROOF-ROLLING IS PROVIDED IN TABLE 4 BELOW:

TABLE 4: FINAL CEMENT STABILIZED CBR/DCP REQUIREMENTS TABLE

TIME ELAPSED BETWEEN FINAL COMPACTION AND DCP TEST	REQUIRED MINIMUM CBR	MINIMUM DCP (BLOWS PER 6")	UNDRAINED SHEAR STRENGTH (PSF)	BEARING CAPACITY (PSF)
24 – 48 HOURS	15	10	3,500	9,800
3 – 7 DAYS	30	21	7,000	18,000
28 DAYS	50	33	12,000	28,500

NOTE: UNDRAINED SHEAR STRENGTH WAS CALCULATED USING THE BLACK (1961) EQUATION. BEARING CAPACITY WAS CALCULATED USING THE VESIC EQUATION MODIFIED FOR TWO LAYERS (12" CEMENT STABILIZED SUBGRADE OVER A NATURAL SUBGRADE WITH A CBR OF 1.5)

   - 1.5. ONCE THE MINIMUM REQUIRED CBR IS ACHIEVED AT ANY CORRESPONDING TIME PERIOD, THE SUBGRADE IS CONSIDERED ADEQUATE AND THE CONTRACTOR MAY PROCEED WITH PROOF-ROLL TESTING. FUTURE DCP TESTING ON THAT SEGMENT OF SUBGRADE IS NOT REQUIRED.
   - 1.6. IF TESTING DOES NOT INDICATE A CBR OF 30 WITHIN 7 DAYS, ADDITIONAL GRAVEL SURFACING AND/OR THE ADDITION OF GEOTEXTILE FABRIC MAY BE REQUIRED. FOR FUTURE SUBGRADE STABILIZATION AREAS, CONTACT THE ENGINEER AND OWNER VIA RFI FOR RECOMMENDATIONS AND APPROVAL.
2. SUBGRADE PROOF-ROLL TESTING AND ACCEPTANCE:
   - 2.1. ONCE THE REQUIRED DCP VALUE HAS BEEN OBTAINED BUT PRIOR TO PLACING AGGREGATE, THE SUBGRADE SHALL BE PROOF-ROLLED. REFER TO THE PROJECT TESTING REQUIREMENTS FOR PROOF-ROLL DEFINITION.
   - 2.2. PROOF-ROLLING SHOULD BE PERFORMED WITH ONE PASS DOWN THE CENTER AND NOT BE PERFORMED WITHIN 12 INCHES OF THE EDGE OF THE STABILIZED SECTION.
   - 2.3. IF PROOF-ROLLING FAILS, RE-STABILIZATION MAY BE REQUIRED AND A NEW ROLLING PATTERN OR ADDITIONAL CEMENT MAY BE REQUIRED.
3. AGGREGATE PLACEMENT:
   - 3.1. SURFACE AGGREGATE SHALL BE PLACED OVER THE STABILIZED SUBGRADE FOLLOWING PASSING PROOF-ROLL TESTS.
   - 3.2. THE AGGREGATE SURFACING IS INTENDED TO PROTECT THE SUBGRADE FROM WATER BEING PUMPED INTO THE SUBGRADE AND TO PROVIDE A TRACTION COURSE. WESTWOOD RECOMMENDS A MINIMUM OF 4 INCHES OF AGGREGATE INITIALLY PLACED OVER STABILIZED SUBGRADE. MAINTENANCE IS REQUIRED THROUGHOUT CONSTRUCTION AND MAY REQUIRE THE PLACEMENT OF ADDITIONAL AGGREGATE.
   - 3.3. REFER TO THE TESTING SCHEDULE FOR AGGREGATE PLACEMENT CRITERIA.

TABLE 5: CEMENT STABILIZATION PRODUCTION TESTING SCHEDULE SUMMARY

LOCATION	TEST	FREQUENCY
COMPACTED SUBGRADE (CEMENT STABILIZED) NOTE: SEE ABOVE FOR INITIAL TESTING REQUIREMENTS	PROCTOR (NATIVE SOIL)	MINIMUM 1 PER MAJOR SOIL TYPE (EXISTING PROCTORS MAY BE USED)
	MOISTURE DENSITY TEST (NUCLEAR DENSITY)	1 PER 1000 LF IN EACH PASS OF THE RECLAIMER, A MIN. 3 PER ROAD
	DCP TEST	1 PER 500 LF IN EACH PASS OF THE RECLAIMER, A MIN. 3 PER ROAD
	PROOF-ROLL (AFTER PASSING DCP TESTS)	ENTIRE LENGTH

NO	REVISION	ZONE	DATE	BY	CHK	ENG	NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN							
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN							
C	90% CIVIL PLANS		9/12/19	TDD	DJN	DJN							

REFERENCE DRAWINGS

DWG NO.	MANUFACTURER	DESCRIPTION

Westwood
Phone (952) 937-5150 12701 Whitewater Dr
Fax (952) 937-5822 Minnetonka, MN 55343
Toll Free (888) 937-5150 www.westwoodps.com
Westwood Professional Services, Inc.

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN and Worth County, IA

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO: 22586	
APVD:	DATE:	SCALE: NONE	

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 AND MANUALS.

ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

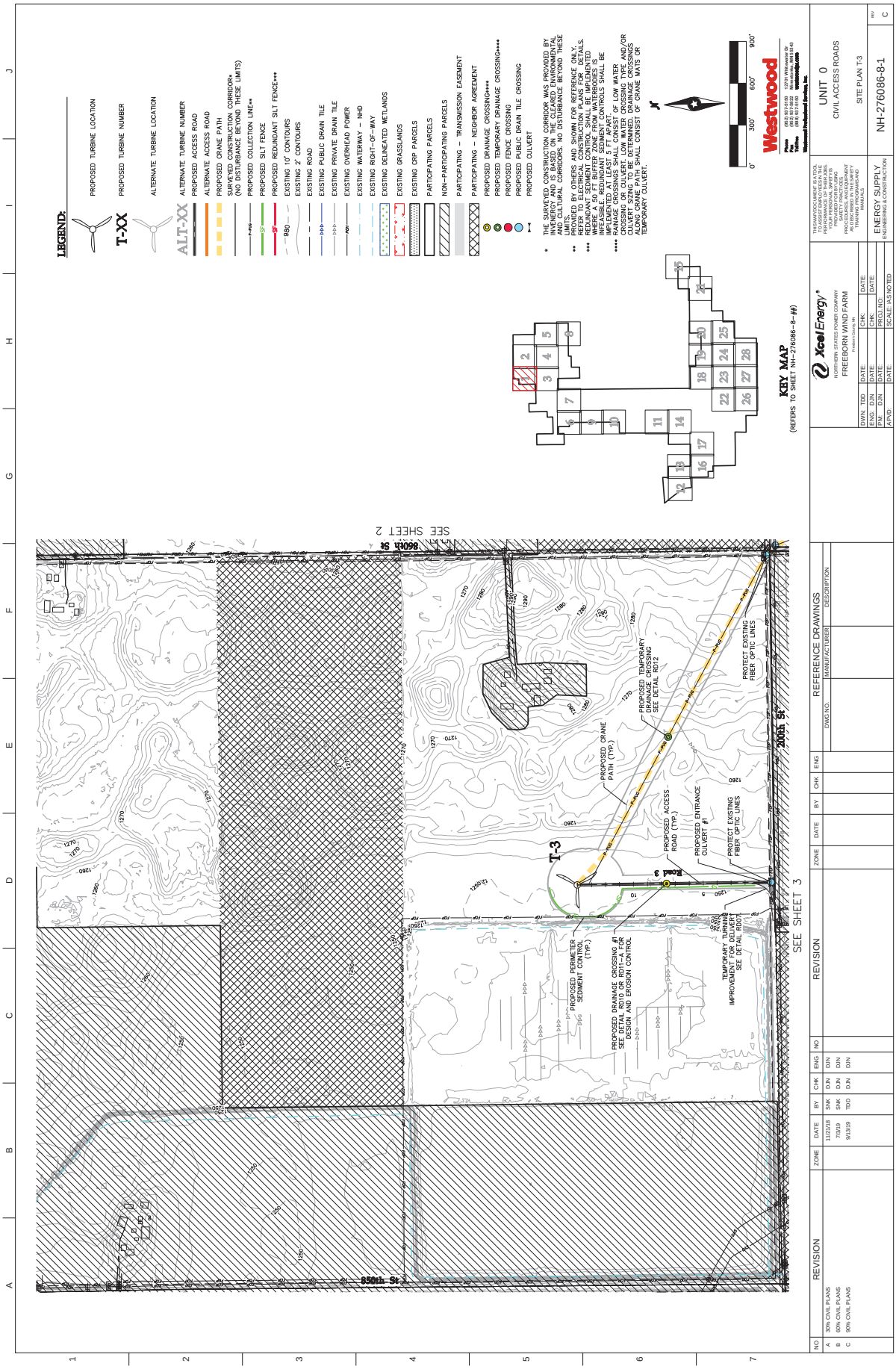
UNIT 0
CIVIL ACCESS ROADS
CONSTRUCTION NOTES

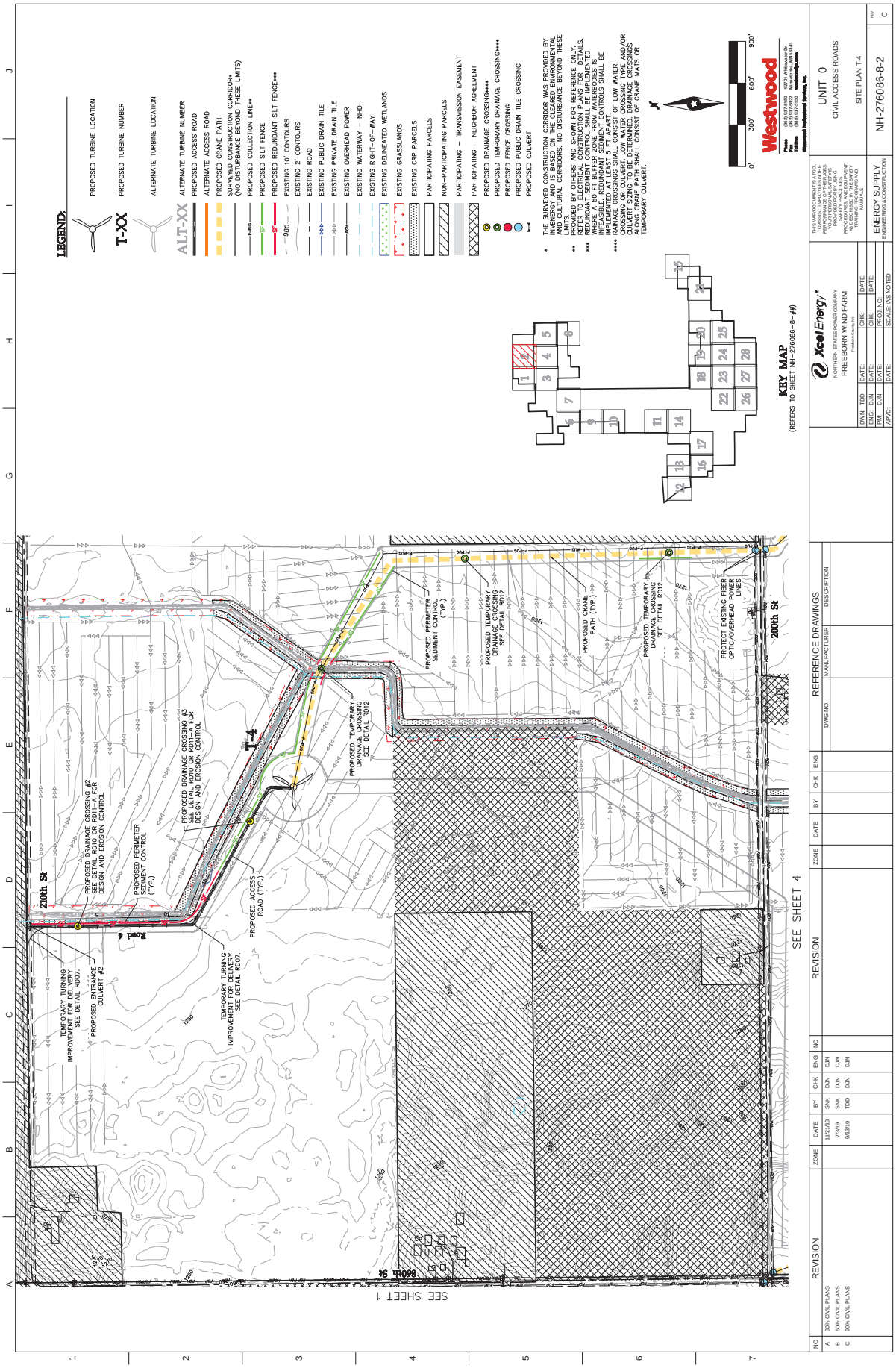
NH-276086-7-2

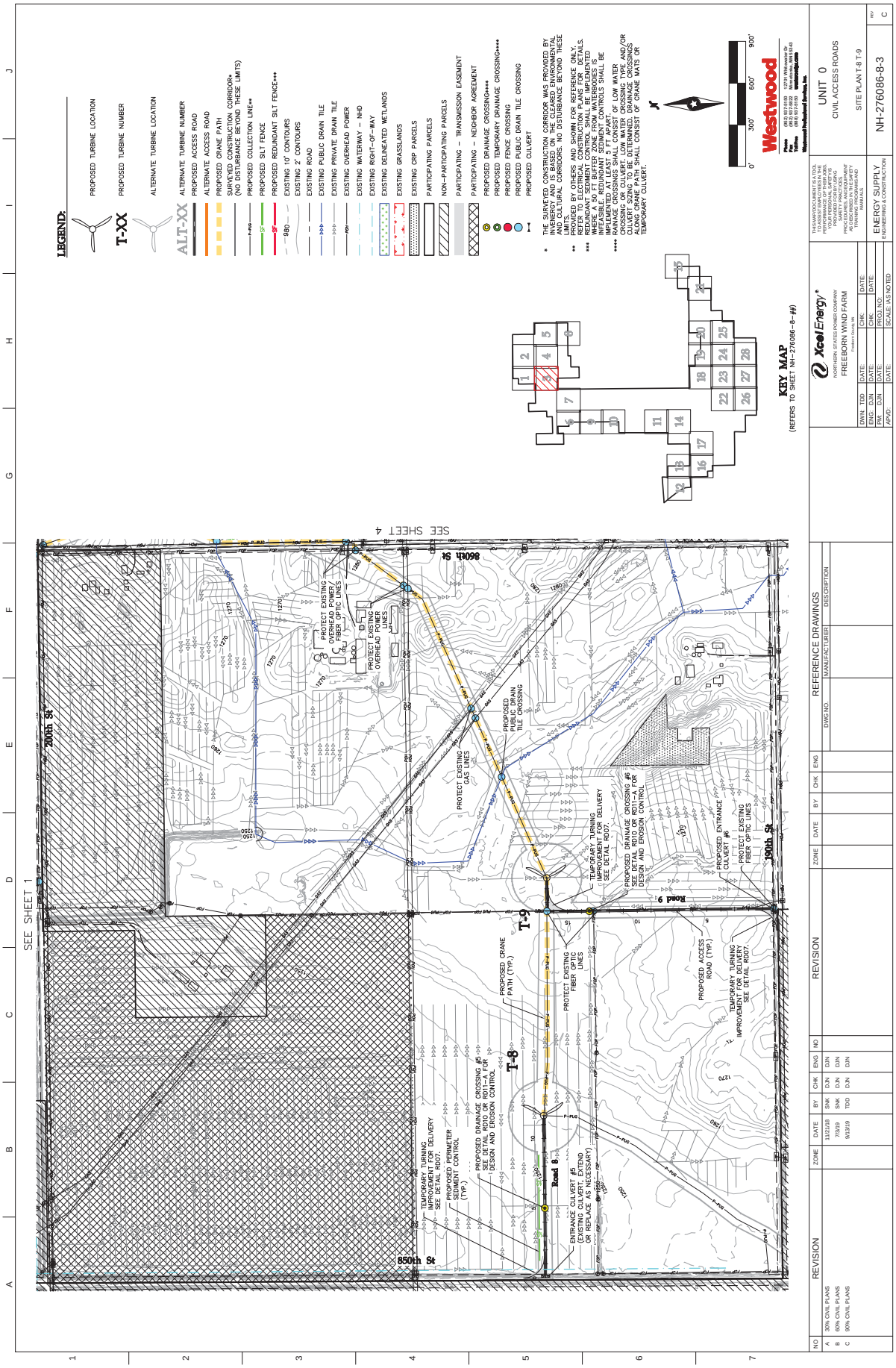
REV C

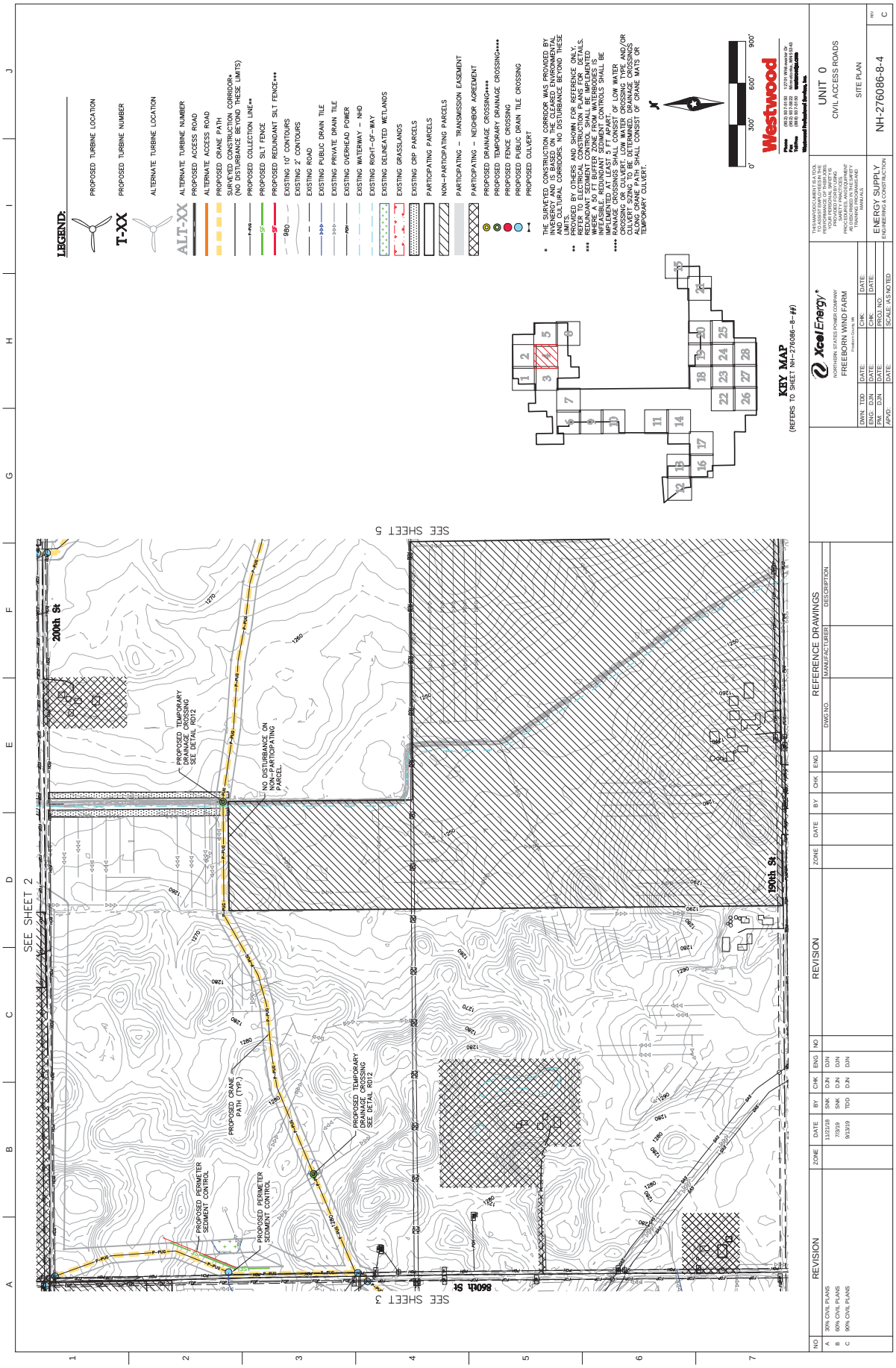
AFCL Exhibit E

Docket No. IP-6946/WS-17-410
Compliance Filing-Section 5.2.6
Attachment A
Page 162 of 221


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE ALL OF THE BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 2
860th St
850th St
200th St
T-3
Road 3
PROPOSED CRANE PATH (TYP.)
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROTECT EXISTING FIBER OPTIC LINES
PROPOSED ACCESS ROAD (TYP.)
PROPOSED ENTRANCE CULVERT #1
PROTECT EXISTING FIBER OPTIC LINES
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED DRAINAGE CROSSING #1 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07
SEE SHEET 3
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
REFERENCE DRAWINGS
DWG NO. MANUFACTURER DESCRIPTION
REVISION
NO ZONE DATE BY CHK ENG NO
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-3
NH-276086-8-1
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REV C


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE 2 TO 5 FT. BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
210th St
200th St
860th St
T-4
Road 4
PROPOSED DRAINAGE CROSSING #2 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED DRAINAGE CROSSING #3 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED ACCESS ROAD (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED ENTRANCE CULVERT #2
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROPOSED CRANE PATH (TYP.)
PROTECT EXISTING FIBER OPTIC/OVERHEAD POWER LINES
SEE SHEET 4
SEE SHEET 1
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-4
NH-276086-8-2
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REFERENCE DRAWINGS
REVISION
NO
ZONE
DATE
BY
CHK
ENG
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN


LEGEND:
PROPOSED TURBINE LOCATION
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY – NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING – TRANSMISSION EASEMENT
PARTICIPATING – NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE A 50 FT. BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT. APART.
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 1
SEE SHEET 4
200th St
860th St
850th St
190th St
Road 8
Road 9
T-8
T-9
PROTECT EXISTING OVERHEAD POWER/ FIBER OPTIC LINES
PROTECT EXISTING OVERHEAD POWER LINES
PROTECT EXISTING GAS LINES
PROPOSED PUBLIC DRAIN TILE CROSSING
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED DRAINAGE CROSSING #6 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED ENTRANCE CULVERT #6
PROTECT EXISTING FIBER OPTIC LINES
PROPOSED CRANE PATH (TYP.)
PROTECT EXISTING FIBER OPTIC LINES
PROPOSED ACCESS ROAD (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED DRAINAGE CROSSING #5 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
ENTRANCE CULVERT #5 (EXISTING CULVERT, EXTEND OR REPLACE AS NECESSARY)
REVISION
NO
ZONE
DATE
BY
CHK
ENG
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
REFERENCE DRAWINGS
DWG NO.
MANUFACTURER
DESCRIPTION
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
DWN: TDD DATE:
ENG: DJN DATE:
PM: DJN DATE:
APVD: DATE:
CHK: DATE:
CHK: DATE:
PROJ. NO.
SCALE: AS NOTED
THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED BY ADDITIONAL SAFETY PRACTICES, PROCEDURES, AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS AND MANUALS.
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-8 T-9
NH-276086-8-3
REV
C


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
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** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE ALL FIT BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 2
SEE SHEET 3
SEE SHEET 5
200th St
190th St
860th St
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
NO DISTURBANCE ON NON-PARTICIPATING PARCEL.
PROPOSED CRANE PATH (TYP.)
PROPOSED PERIMETER SEDIMENT CONTROL
REFERENCE DRAWINGS
DWG NO.
MANUFACTURER
DESCRIPTION
REVISION
NO
ZONE
DATE
BY
CHK
ENG
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
DWN: TDD DATE:
ENG: DJN DATE:
PM: DJN DATE:
APVD: DATE:
CHK: DATE:
CHK: DATE:
PROJ. NO.
SCALE: AS NOTED
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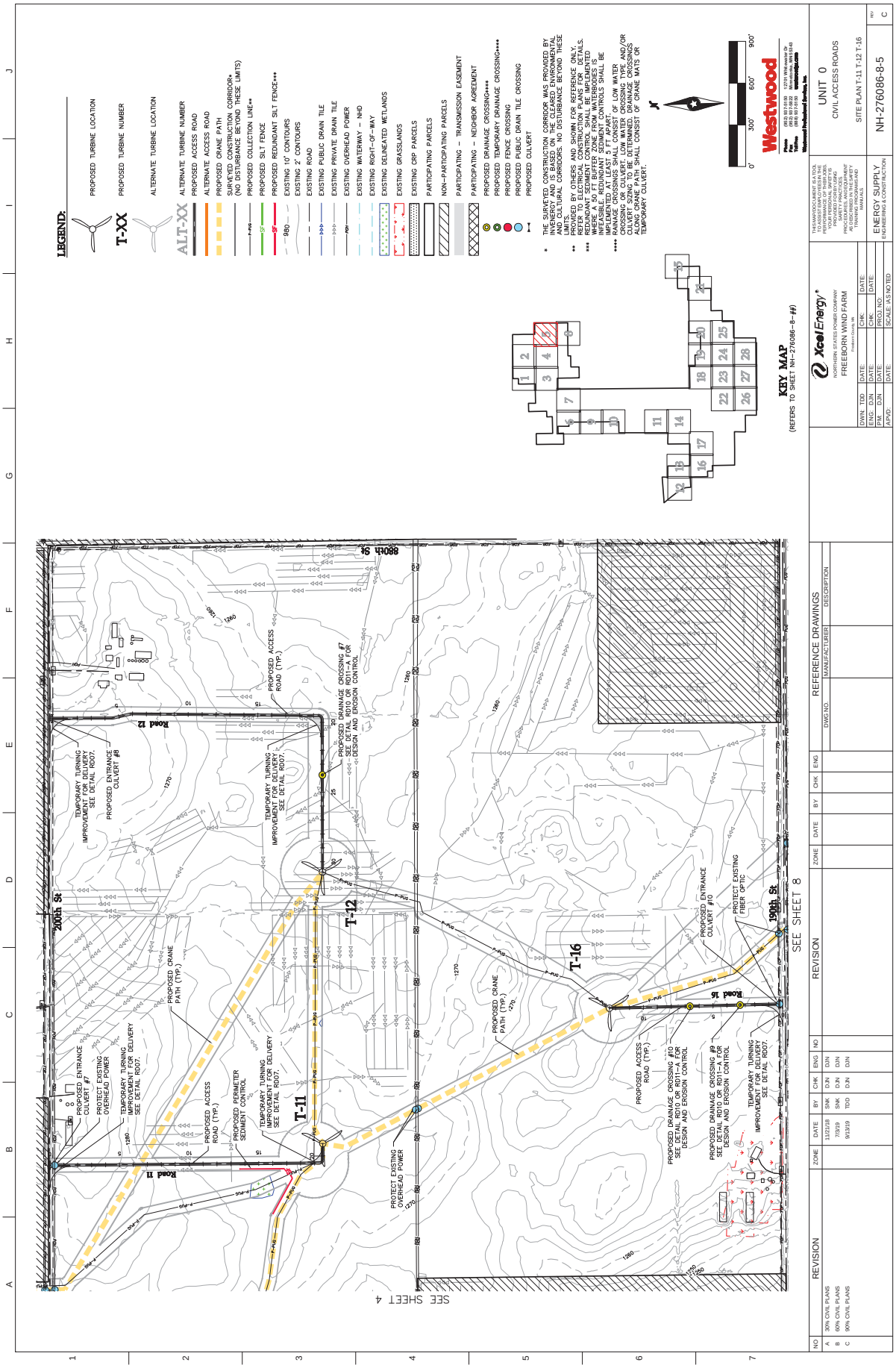
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN
NH-276086-8-4
REV
C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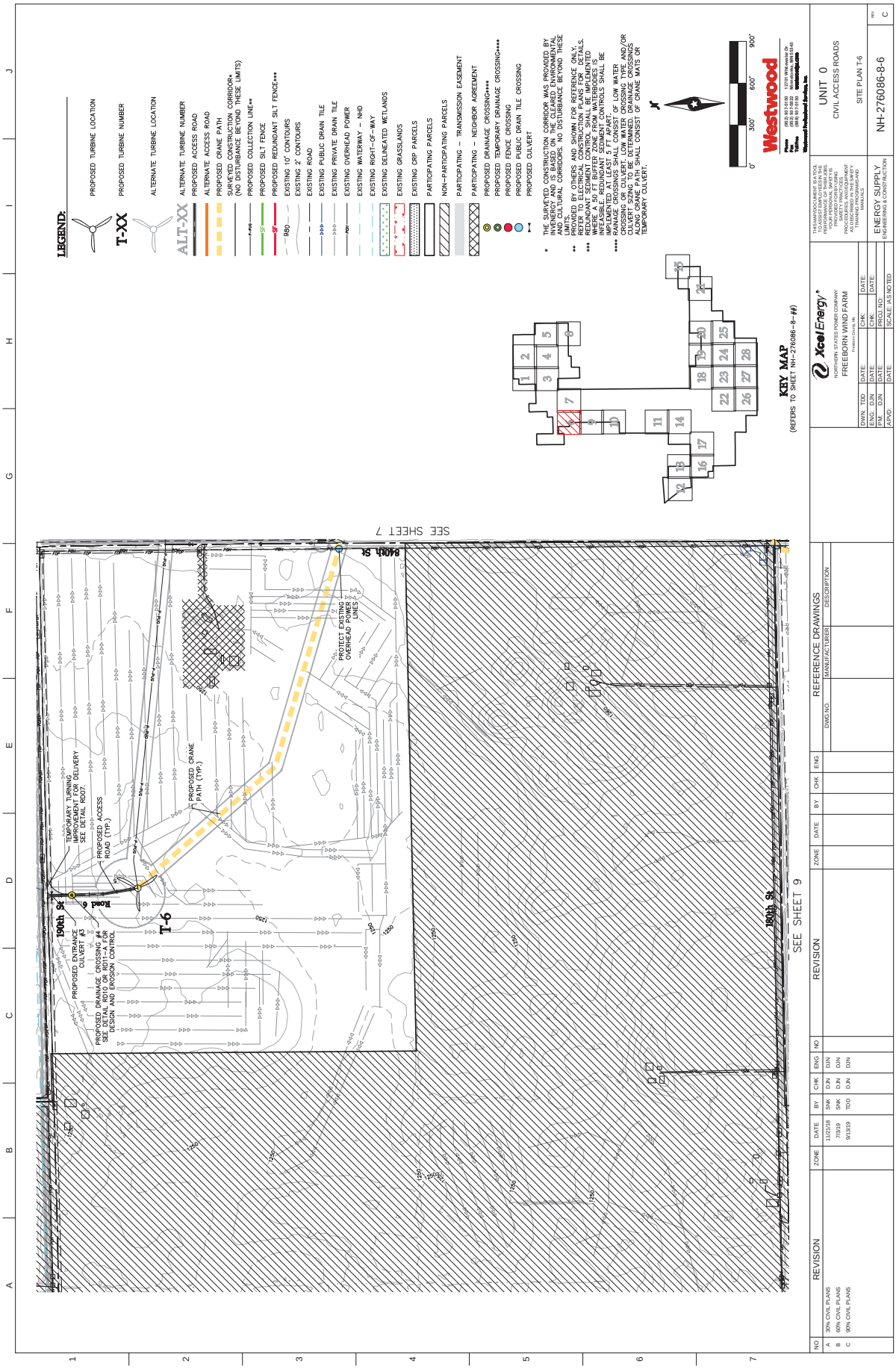
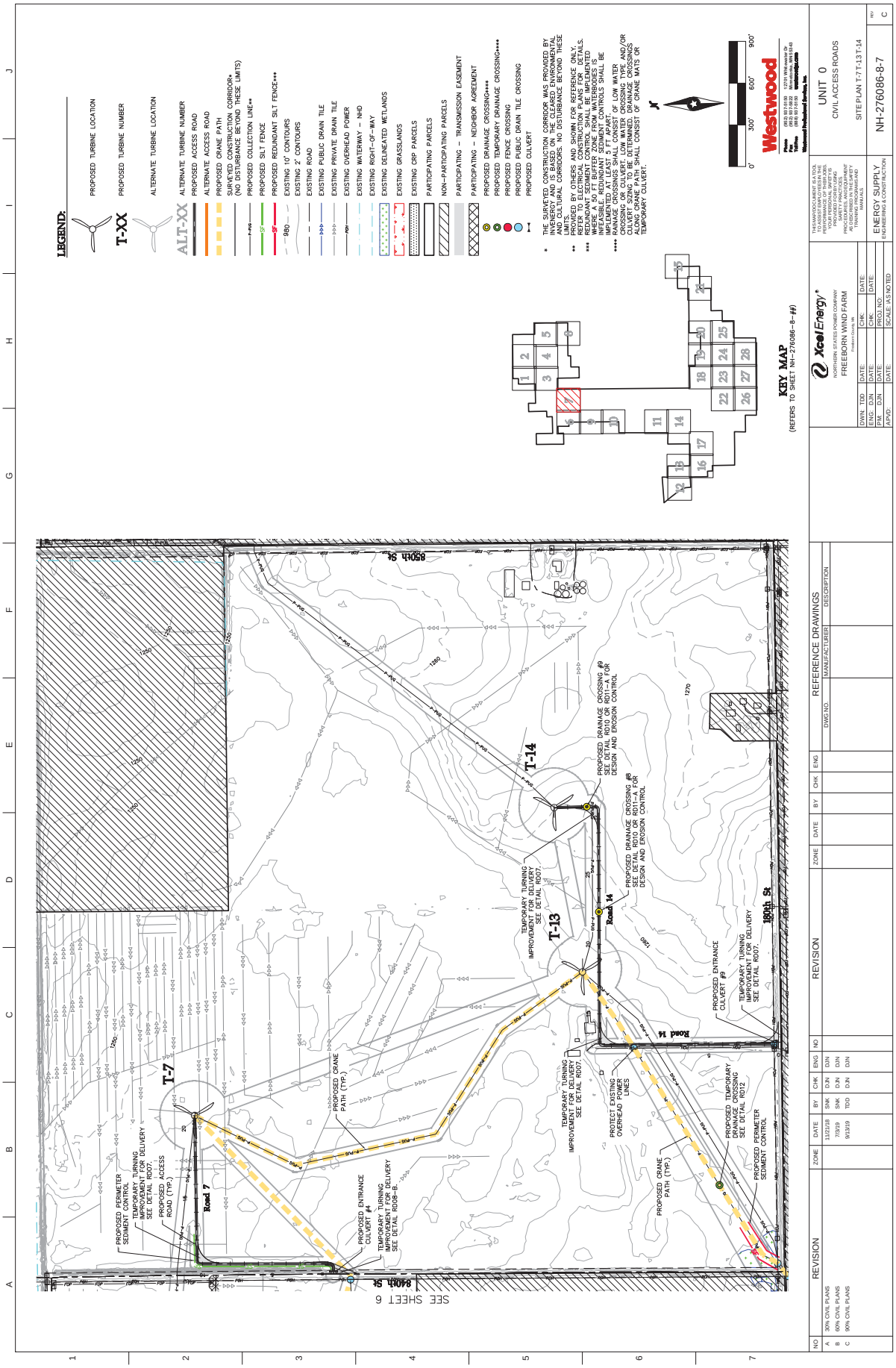
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND INCLUDES ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROPOSED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED ADJACENT TO ALL PROPOSED ACCESS ROADS. WHERE A SECOND, REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** PROPOSED DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG PROPOSED ACCESS ROADS SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
KEY MAP
(REFERS TO SHEET NH-276086-8-#)
Westwood
0' 300' 600' 900'
SEE SHEET 4
SEE SHEET 8
200th St
190th St
Road 11
Road 12
Road 16
T-11
T-12
T-16
PROPOSED ENTRANCE CULVERT #7
PROPOSED ENTRANCE CULVERT #8
PROPOSED ENTRANCE CULVERT #10
PROTECT EXISTING OVERHEAD POWER
PROTECT EXISTING FIBER OPTIC
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL ROD7.
PROPOSED ACCESS ROAD (TYP.)
PROPOSED CRANE PATH (TYP.)
PROPOSED PERIMETER SEDIMENT CONTROL
PROPOSED DRAINAGE CROSSING #7 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED DRAINAGE CROSSING #8 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED DRAINAGE CROSSING #9 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
XcelEnergy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
REVISION
NO
ZONE
DATE
BY
CHK
ENG
NO
30% CIVIL PLANS
11/21/18
SMK
DJN
DJN
A
60% CIVIL PLANS
7/3/19
SMK
DJN
DJN
B
90% CIVIL PLANS
9/13/19
TDD
DJN
DJN
C
REFERENCE DRAWINGS
DWG NO.
MANUFACTURER
DESCRIPTION
DWN: TDD
ENG: DJN
PM: DJN
APVD:
DATE:
CHK:
PROJ. NO
SCALE: AS NOTED
THIS MEDIA/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR DUTIES. YOUR PERSONAL SAFETY IS PROVIDED BY FOLLOWING SAFETY PRACTICES AND PROCEDURES AS DESCRIBED IN THE SAFETY MANUAL, EQUIPMENT TRAINING AND O&M MANUALS.
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-11 T-12 T-16
NH-276086-8-5
REV
C


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALT-XX
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INTERESTED PARTIES BASED ON ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROPOSED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** WHERE A SILT FENCE IS SHOWN, A REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED. WHERE A SILT FENCE IS INFEASIBLE, REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** HARVEST ROAD CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATHS SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-#)
SEE SHEET 7
SEE SHEET 9
T-6
PROPOSED CRANE PATH (TYP.)
PROPOSED ACCESS ROAD (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE ESC WALL ROCK
PROPOSED 24' TRIANGLE CULVERT #3
PROPOSED DRAINAGE CROSSING #4 SEE ESC WALL ROCK FOR DESIGN AND EROSION CONTROL
PROTECT EXISTING OVERHEAD POWER LINES
190th St
180th St
Road 6
XcelEnergy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-6
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
NH-276086-8-6
C
REVISION
NO
A 30% CIVIL PLANS 11/21/18 SMK DJN DJN
B 60% CIVIL PLANS 7/3/19 SMK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
REFERENCE DRAWINGS
DWG NO. MANUFACTURER DESCRIPTION
DWN: TDD DATE:
ENG: DJN DATE:
PM: DJN DATE:
APVD: DATE:
CHK: DATE:
PROJ. NO.
SCALE: AS NOTED


LEGEND:
PROPOSED TURBINE LOCATION
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
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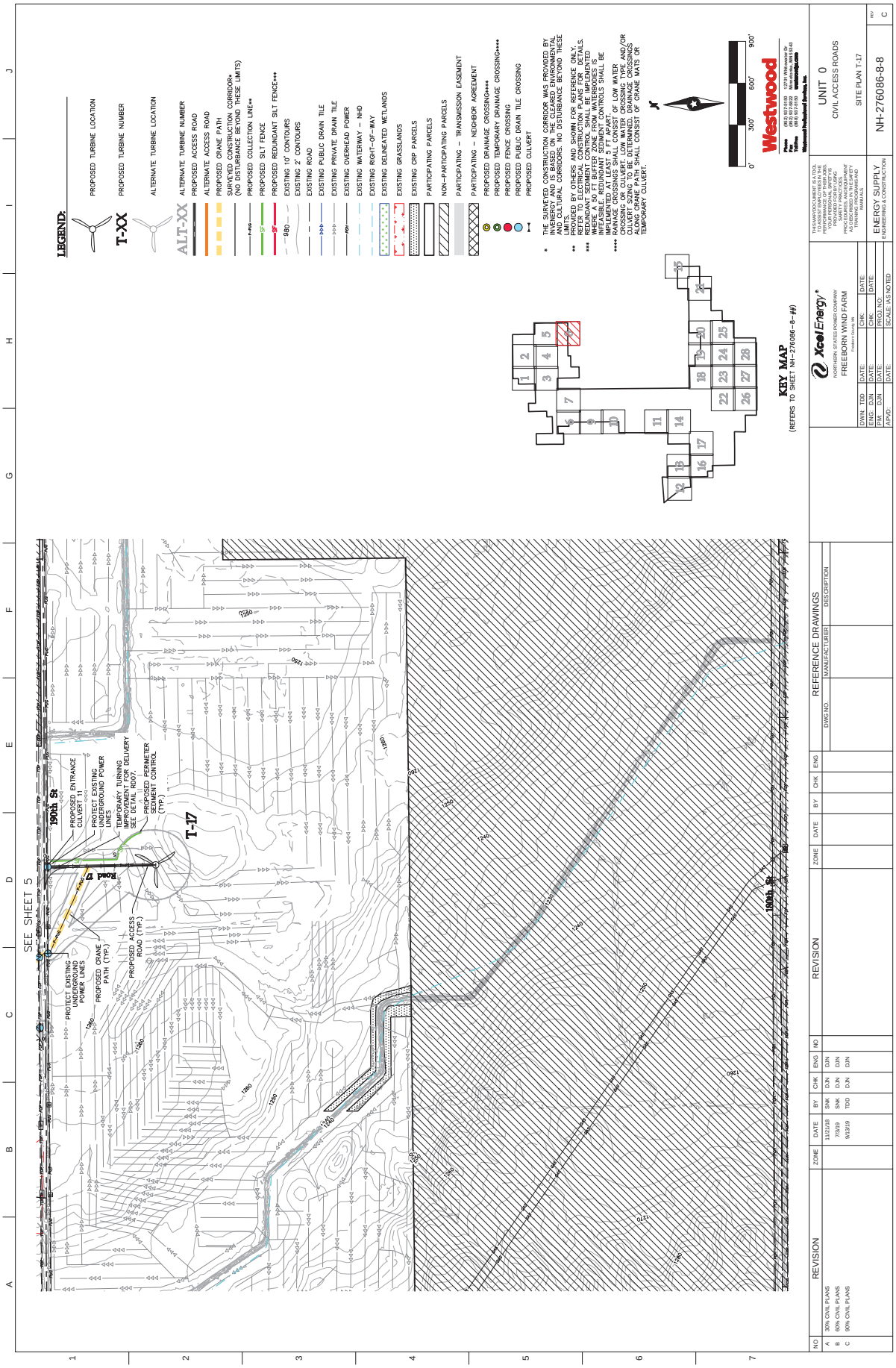
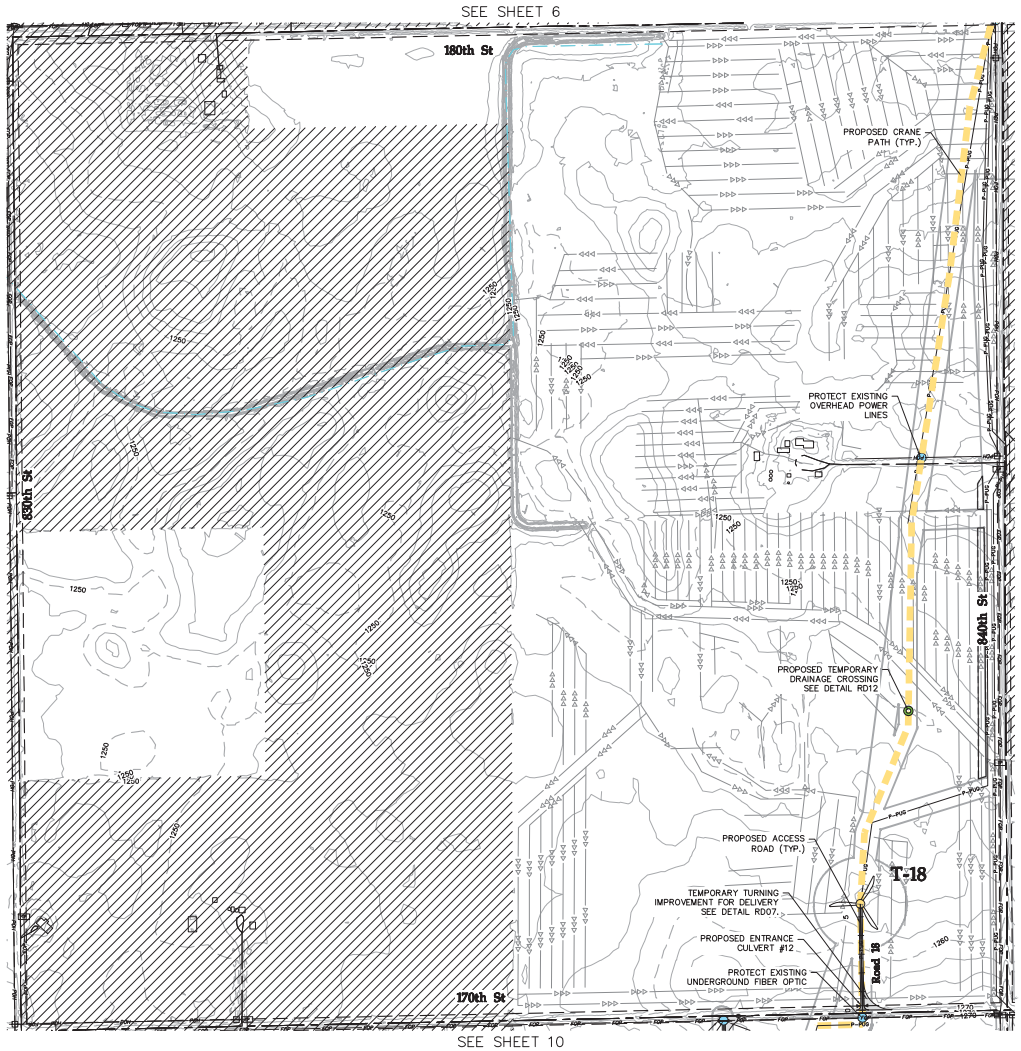
0' 300' 600' 900'
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
T-7
T-13
T-14
Road 7
Road 14
850th St
840th St
180th St
PROPOSED PERIMETER SEDIMENT CONTROL
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED ACCESS ROAD (TYP.)
PROPOSED ENTRANCE CULVERT #4
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD08-B.
PROPOSED CRANE PATH (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROTECT EXISTING OVERHEAD POWER LINES
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROPOSED PERIMETER SEDIMENT CONTROL
PROPOSED CRANE PATH (TYP.)
PROPOSED DRAINAGE CROSSING #9 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED DRAINAGE CROSSING #8 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED ENTRANCE CULVERT #9
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
SEE SHEET 6
Westwood
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-7 T-13 T-14
NH-276086-8-7
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REVISION
REFERENCE DRAWINGS
DWG NO.
MANUFACTURER
DESCRIPTION
A 30% CIVIL PLANS 11/21/18 SMK DJN DJN
B 60% CIVIL PLANS 7/3/19 SMK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALT-XX
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INGREY AND IS BASED ON ENGINEERING, ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROPOSED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** WHERE APPLICABLE, REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** WHERE APPLICABLE, CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS LARGER THAN A CULVERT SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
SEE SHEET 5
T-17
PROPOSED ENTRANCE CULVERT 11
PROTECT EXISTING UNDERGROUND POWER LINES
TEMPORARY TURNING TEMPORARY TURN DELIVERY SEE DETAIL R007.
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED CRANE PATH (TYP.)
PROPOSED ACCESS ROAD (TYP.)
190th St
Road 12
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
0' 300' 600' 900'
Westwood
Phone 952.937.5150
Toll Free 800.992.0806
Fax 952.937.5822
Website www.westwoodps.com
Minneapolis Headquarters Suite 300
12701 Whitewater Drive
Minnetonka, MN 55343
XcelEnergy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR DUTIES. YOUR PERSONAL SAFETY IS PARAMOUNT. ALL EMPLOYEES SHALL FOLLOW ALL SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY MANUAL AND FIELD GUIDE MANUALS.
DWN: TDD DATE:
ENG: DJN DATE:
CHK: DJN DATE:
APVD: DATE:
CHK: DATE:
CHK: DATE:
PROJ. NO
SCALE: AS NOTED
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-17
NH-276086-8-8
REV C
NO REVISION ZONE DATE BY CHK ENG NO
A 30% CIVIL PLANS 11/27/18 SMK DJN DJN
B 60% CIVIL PLANS 7/3/19 SMK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
REFERENCE DRAWINGS
DWG NO. MANUFACTURER DESCRIPTION



LEGEND:

- PROPOSED TURBINE LOCATION
- T-XX PROPOSED TURBINE NUMBER
- ALTERNATE TURBINE LOCATION
- ALT-XX ALTERNATE TURBINE NUMBER
- PROPOSED ACCESS ROAD
- ALTERNATE ACCESS ROAD
- PROPOSED CRANE PATH
- SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
- PROPOSED COLLECTION LINE**
- PROPOSED SILT FENCE
- PROPOSED REDUNDANT SILT FENCE***
- EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- EXISTING ROAD
- EXISTING PUBLIC DRAIN TILE
- EXISTING PRIVATE DRAIN TILE
- EXISTING OVERHEAD POWER
- EXISTING WATERWAY – NHD
- EXISTING RIGHT-OF-WAY
- EXISTING DELINEATED WETLANDS
- EXISTING GRASSLANDS
- EXISTING CRP PARCELS
- PARTICIPATING PARCELS
- NON-PARTICIPATING PARCELS
- PARTICIPATING – TRANSMISSION EASEMENT
- PARTICIPATING – NEIGHBOR AGREEMENT
- PROPOSED DRAINAGE CROSSING****
- PROPOSED TEMPORARY DRAINAGE CROSSING****
- PROPOSED FENCE CROSSING
- PROPOSED PUBLIC DRAIN TILE CROSSING
- PROPOSED CULVERT

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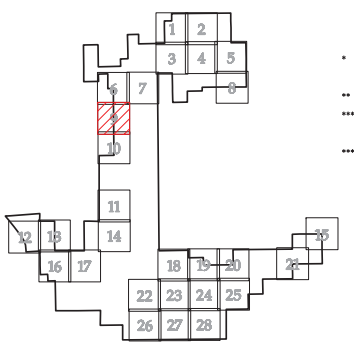


KEY MAP
(REFERS TO SHEET NH-276086-8-##)

0' 300' 600' 900'

Westwood
Phone (952) 937-5150 12701 Whitewater Dr
Fax (952) 937-5822 Minnetonka, MN 55343
Toll Free (888) 937-5150 westwood@us.com
Westwood Professional Services, Inc.

NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN
C	90% CIVIL PLANS		9/13/19	TDD	DJN	DJN

NO	REVISION	ZONE	DATE	BY	CHK	ENG

REFERENCE DRAWINGS

DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO:	
APVD:	DATE:	SCALE: IAS NOTED	

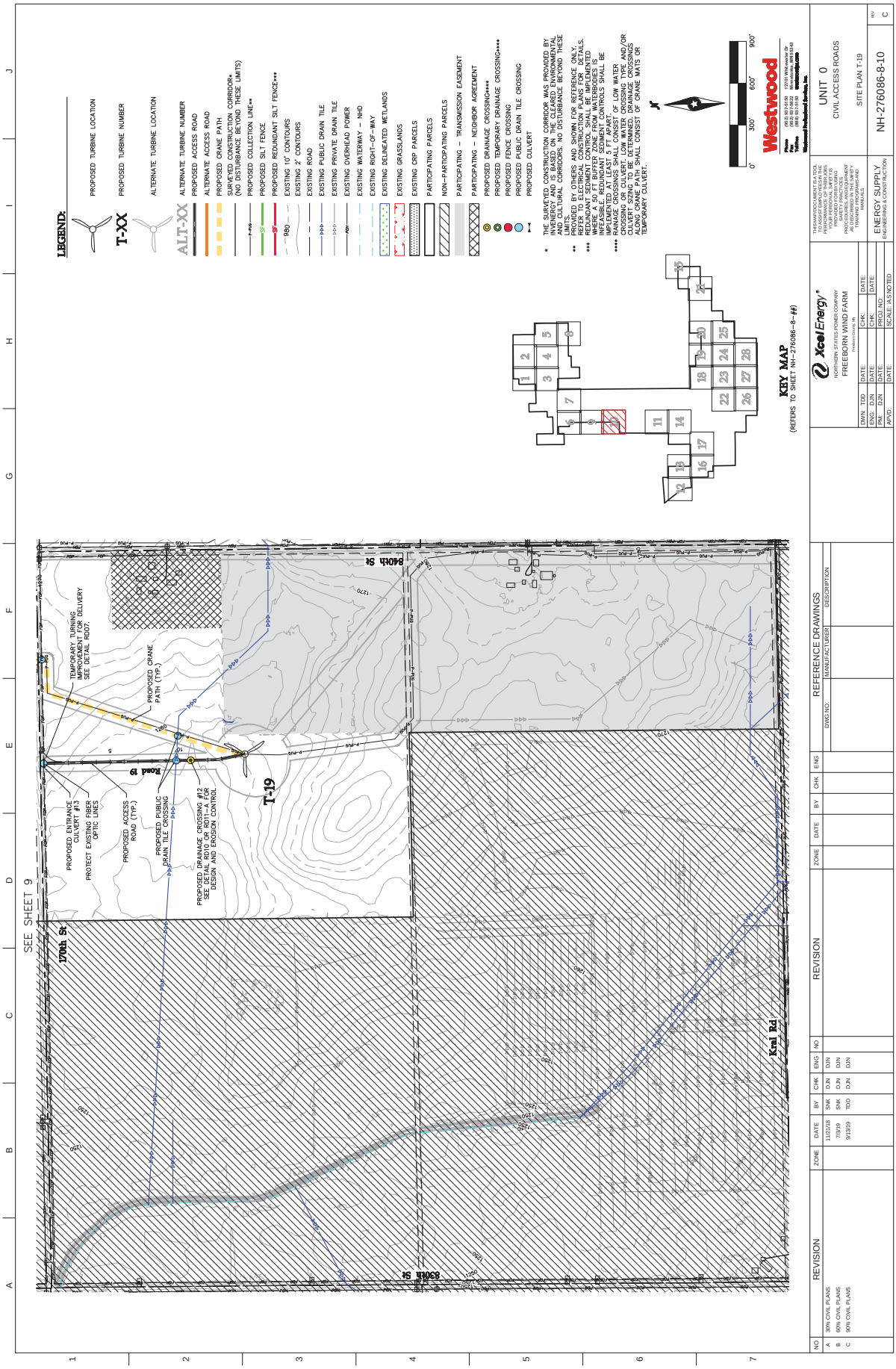
THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES PROCEDURES, AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS AND MANUALS.

ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

UNIT 0
CIVIL ACCESS ROADS

SITE PLAN T-18

NH-276086-8-9 REV C


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
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PROPOSED CULVERT
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0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 9
170th St
830th St
840th St
Road 19
Kral Rd
T-19
PROPOSED ENTRANCE CULVERT #13
PROTECT EXISTING FIBER OPTIC LINES
PROPOSED ACCESS ROAD (TYP.)
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED DRAINAGE CROSSING #12 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED CRANE PATH (TYP.)
REFERENCE DRAWINGS
DWG NO.
MANUFACTURER
DESCRIPTION
REVISION
NO
ZONE
DATE
BY
CHK
ENG
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
DWN: TDD DATE:
ENG: DJN DATE:
PM: DJN DATE:
APVD: DATE:
CHK: DATE:
CHK: DATE:
PROJ. NO.
SCALE: AS NOTED
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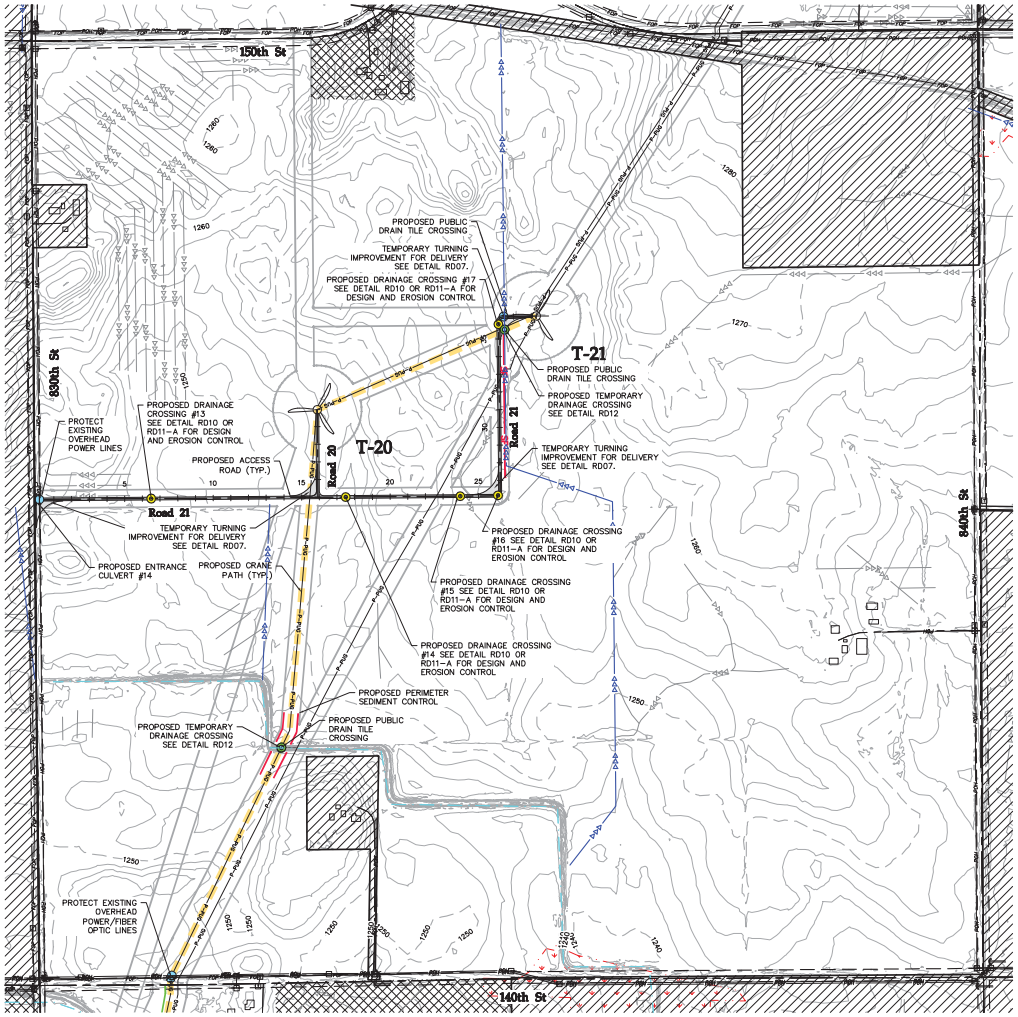
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-19
NH-276086-8-10
REV
C



SEE SHEET 14

LEGEND:

- PROPOSED TURBINE LOCATION
- T-XX PROPOSED TURBINE NUMBER
- ALTERNATE TURBINE LOCATION
- ALT-XX ALTERNATE TURBINE NUMBER
- PROPOSED ACCESS ROAD
- ALTERNATE ACCESS ROAD
- PROPOSED CRANE PATH
- SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
- PROPOSED COLLECTION LINE**
- PROPOSED SILT FENCE
- PROPOSED REDUNDANT SILT FENCE***
- EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- EXISTING ROAD
- EXISTING PUBLIC DRAIN TILE
- EXISTING PRIVATE DRAIN TILE
- EXISTING OVERHEAD POWER
- EXISTING WATERWAY – NHD
- EXISTING RIGHT-OF-WAY
- EXISTING DELINEATED WETLANDS
- EXISTING GRASSLANDS
- EXISTING CRP PARCELS
- PARTICIPATING PARCELS
- NON-PARTICIPATING PARCELS
- PARTICIPATING – TRANSMISSION EASEMENT
- PARTICIPATING – NEIGHBOR AGREEMENT
- PROPOSED DRAINAGE CROSSING****
- PROPOSED TEMPORARY DRAINAGE CROSSING****
- PROPOSED FENCE CROSSING
- PROPOSED PUBLIC DRAIN TILE CROSSING
- PROPOSED CULVERT

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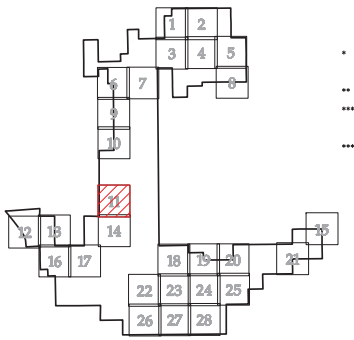

KEY MAP
(REFERS TO SHEET NH-276086-8-##)

0' 300' 600' 900'

Westwood
Phone (952) 937-5150 12701 Whitewater Dr
Fax (952) 937-5822 Minnetonka, MN 55343
Toll Free (888) 937-5150 westwood@us.com
Westwood Professional Services, Inc.

NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN
C	90% CIVIL PLANS		9/13/19	TDD	DJN	DJN

NO	REVISION	ZONE	DATE	BY	CHK	ENG

REFERENCE DRAWINGS

DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO:	
APVD:	DATE:	SCALE: AS NOTED	

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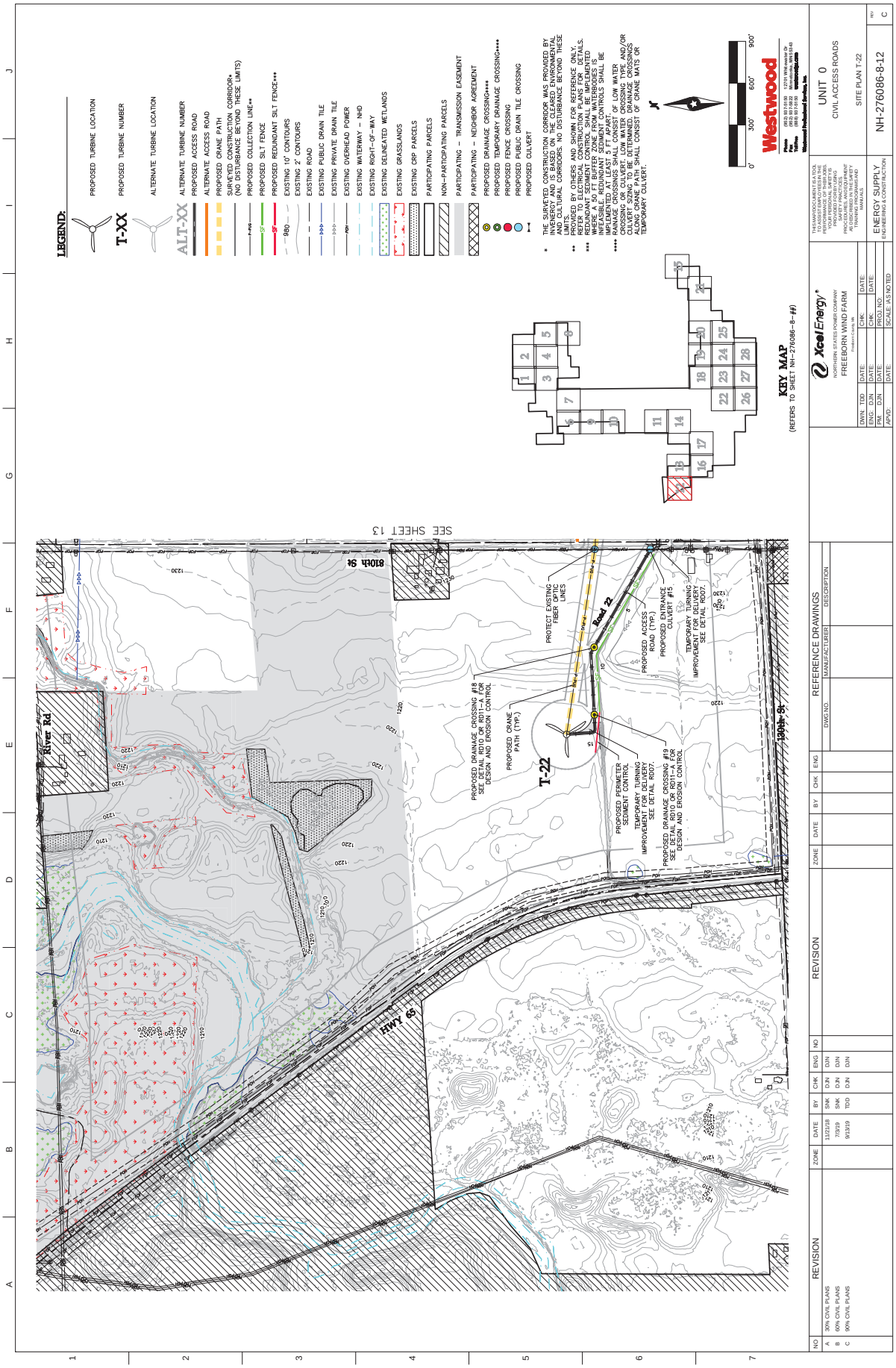
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

UNIT 0
CIVIL ACCESS ROADS

SITE PLAN T-20 T-21

NH-276086-8-11 REV C

AFCL Exhibit E


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
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PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
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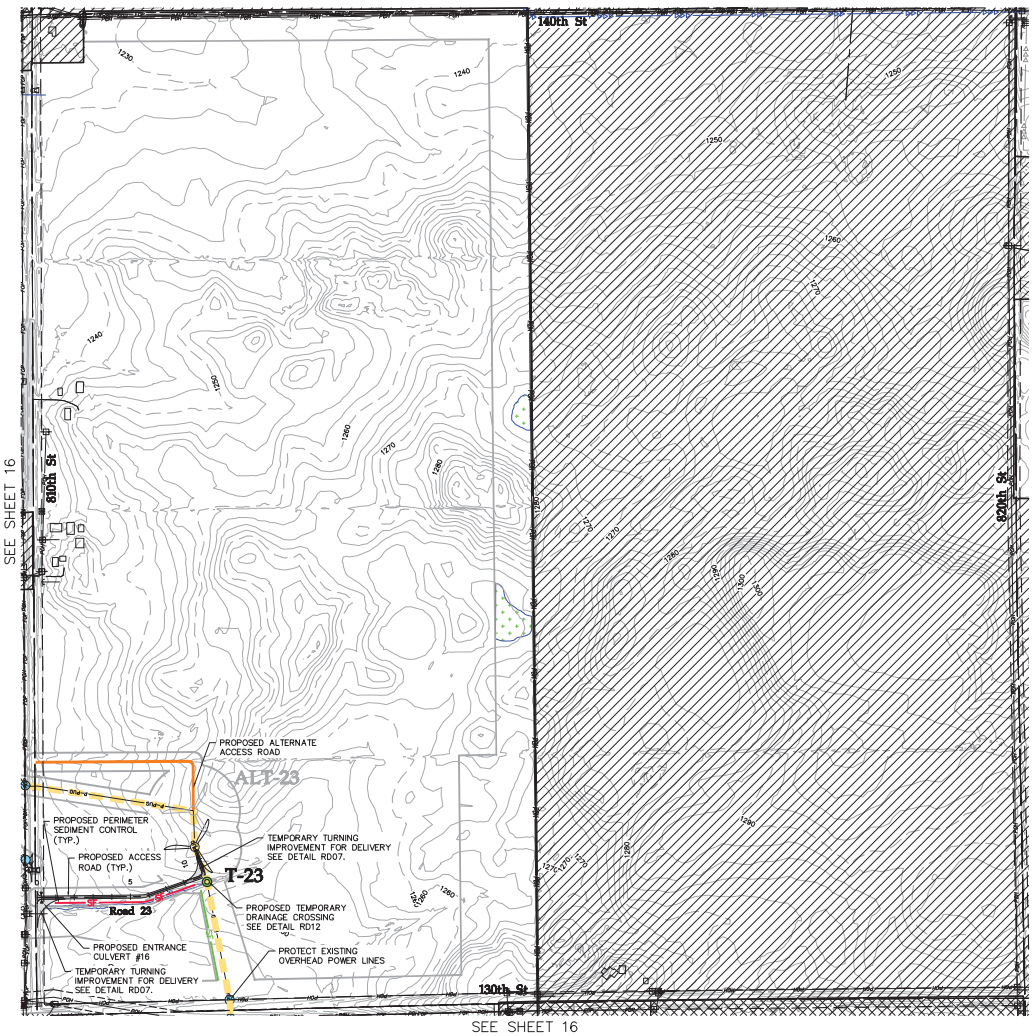
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 13
810th St
River Rd
HWY 65
130th St
Road 22
T-22
PROTECT EXISTING FIBER OPTIC LINES
PROPOSED ACCESS ROAD (TYP.)
PROPOSED ENTRANCE CULVERT #15
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED DRAINAGE CROSSING #18 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED CRANE PATH (TYP.)
PROPOSED PERIMETER SEDIMENT CONTROL
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED DRAINAGE CROSSING #19 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-22
NH-276086-8-12
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REFERENCE DRAWINGS
REVISION
NO
ZONE
DATE
BY
CHK
ENG
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN



LEGEND:

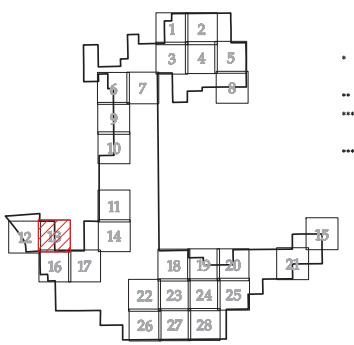
- PROPOSED TURBINE LOCATION
- T-XX PROPOSED TURBINE NUMBER
- ALTERNATE TURBINE LOCATION
- ALT-XX ALTERNATE TURBINE NUMBER
- PROPOSED ACCESS ROAD
- ALTERNATE ACCESS ROAD
- PROPOSED CRANE PATH
- SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
- PROPOSED COLLECTION LINE**
- PROPOSED SILT FENCE
- PROPOSED REDUNDANT SILT FENCE***
- 980 EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- EXISTING ROAD
- EXISTING PUBLIC DRAIN TILE
- EXISTING PRIVATE DRAIN TILE
- EXISTING OVERHEAD POWER
- EXISTING WATERWAY – NHD
- EXISTING RIGHT-OF-WAY
- EXISTING DELINEATED WETLANDS
- EXISTING GRASSLANDS
- EXISTING CRP PARCELS
- PARTICIPATING PARCELS
- NON-PARTICIPATING PARCELS
- PARTICIPATING – TRANSMISSION EASEMENT
- PARTICIPATING – NEIGHBOR AGREEMENT
- PROPOSED DRAINAGE CROSSING****
- PROPOSED TEMPORARY DRAINAGE CROSSING****
- PROPOSED FENCE CROSSING
- PROPOSED PUBLIC DRAIN TILE CROSSING
- PROPOSED CULVERT

* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.

** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.

*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE A 50 FT BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.

**** RAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.



KEY MAP
(REFERS TO SHEET NH-276086-8-##)

0' 300' 600' 900'

Westwood
Phone (952) 937-5150 12701 Whitewater Dr
Fax (952) 937-5822 Minnetonka, MN 55343
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

NO	REVISION	ZONE	DATE	BY	CHK	ENG	NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN							
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN							
C	90% CIVIL PLANS		9/13/19	TDD	DJN	DJN							

REFERENCE DRAWINGS

DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO:	
APVD:	DATE:	SCALE: AS NOTED	

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 AND MANUALS.

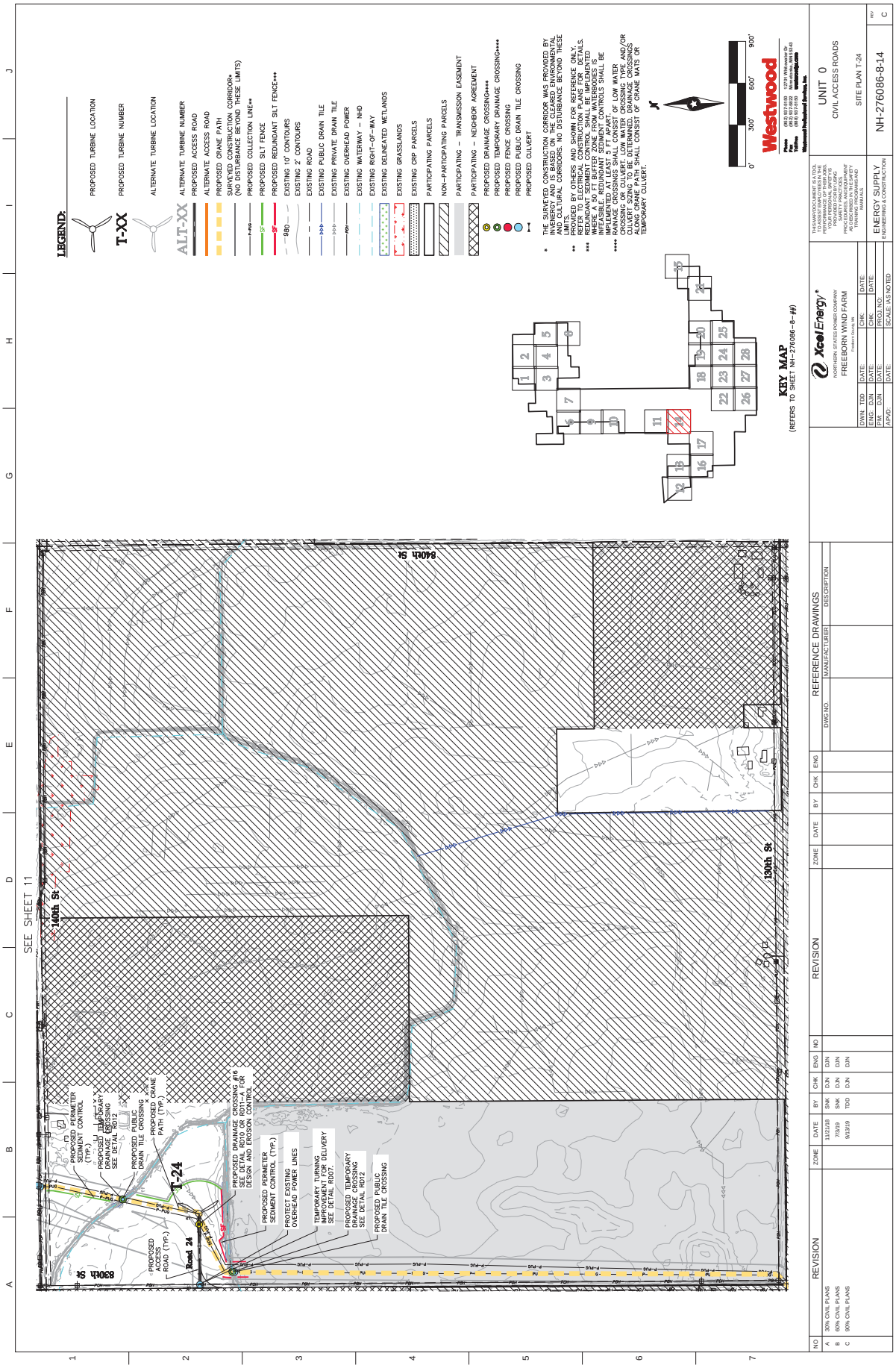
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

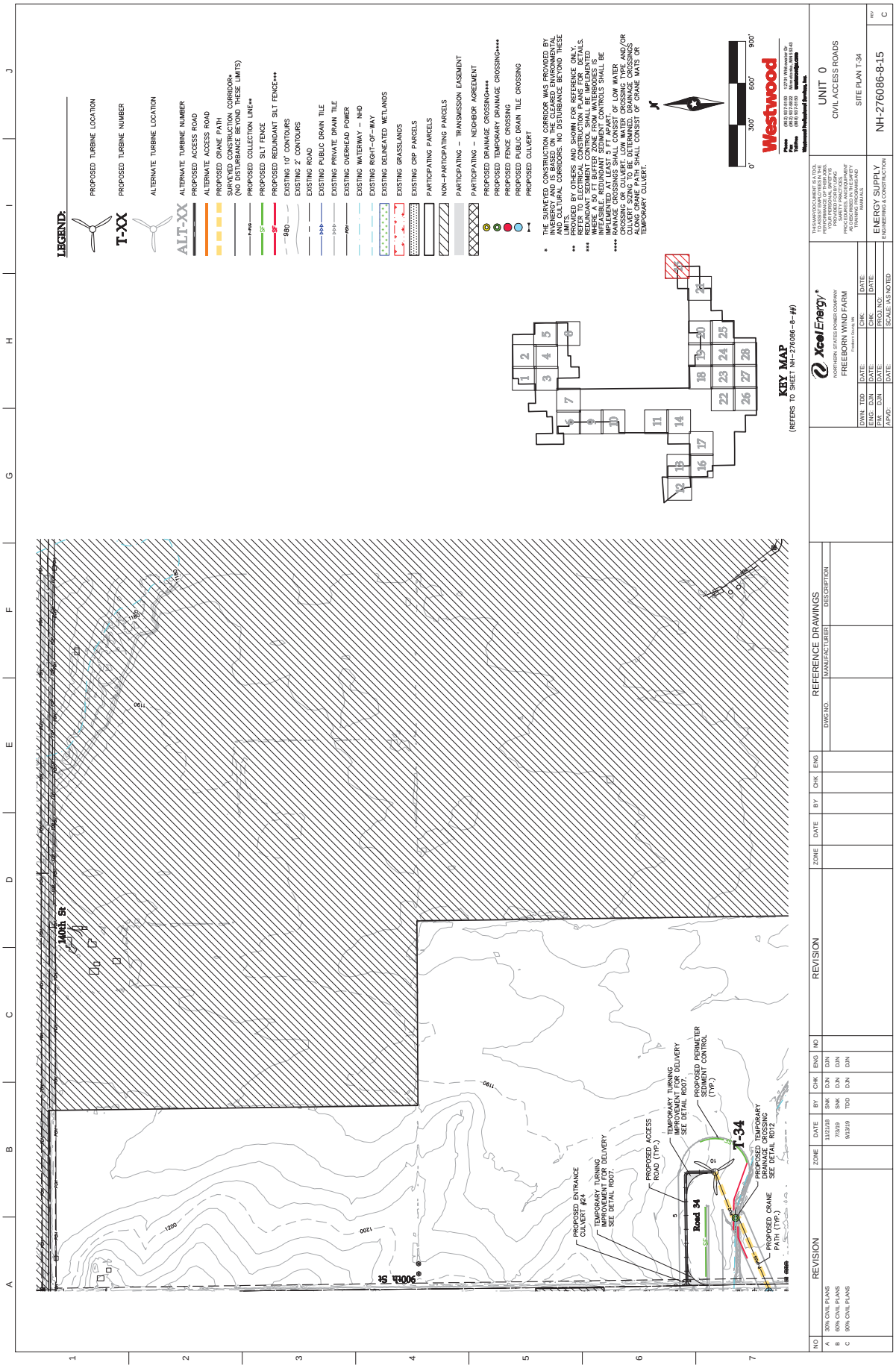
UNIT 0
CIVIL ACCESS ROADS

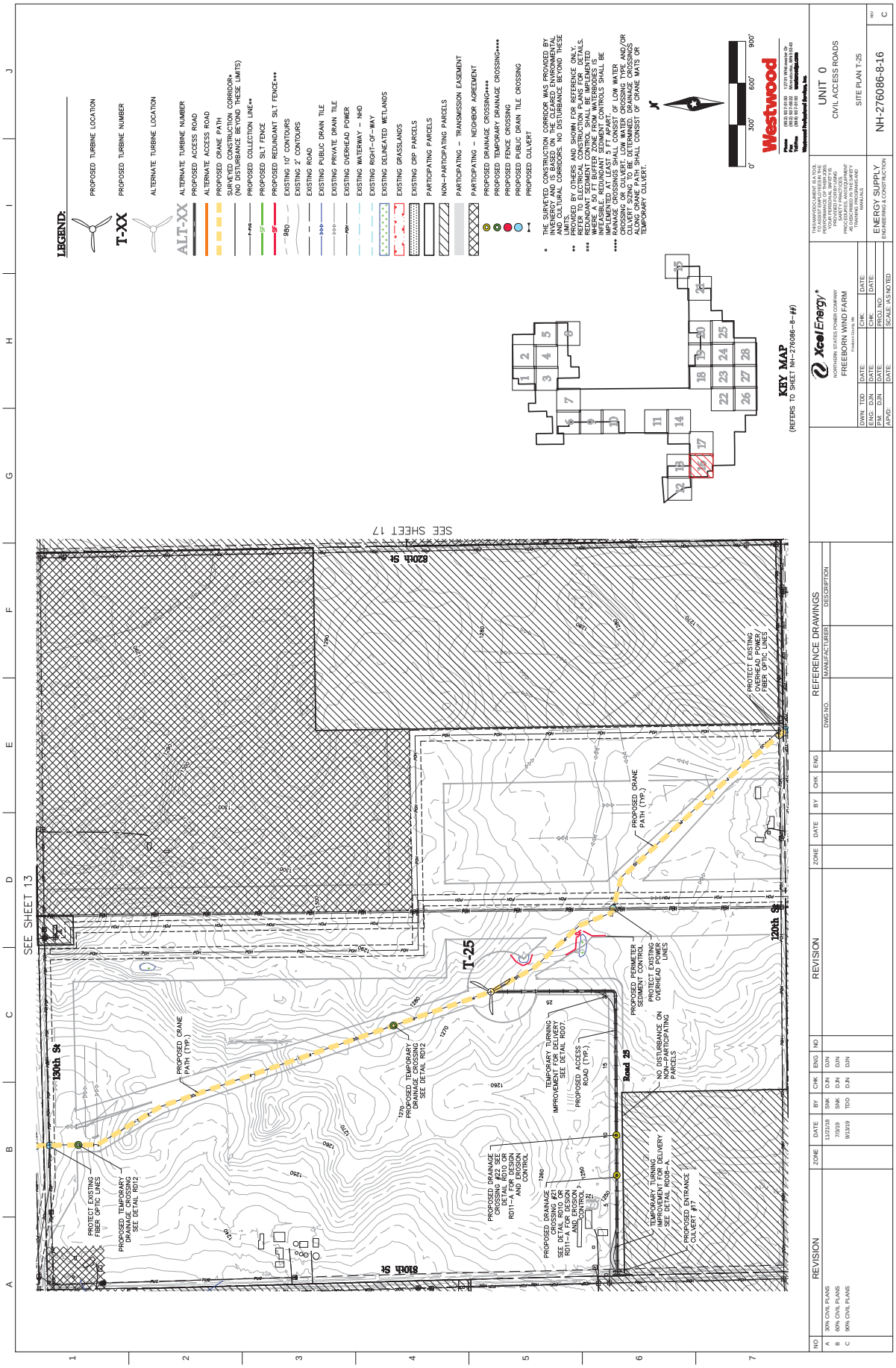
SITE PLAN T-23

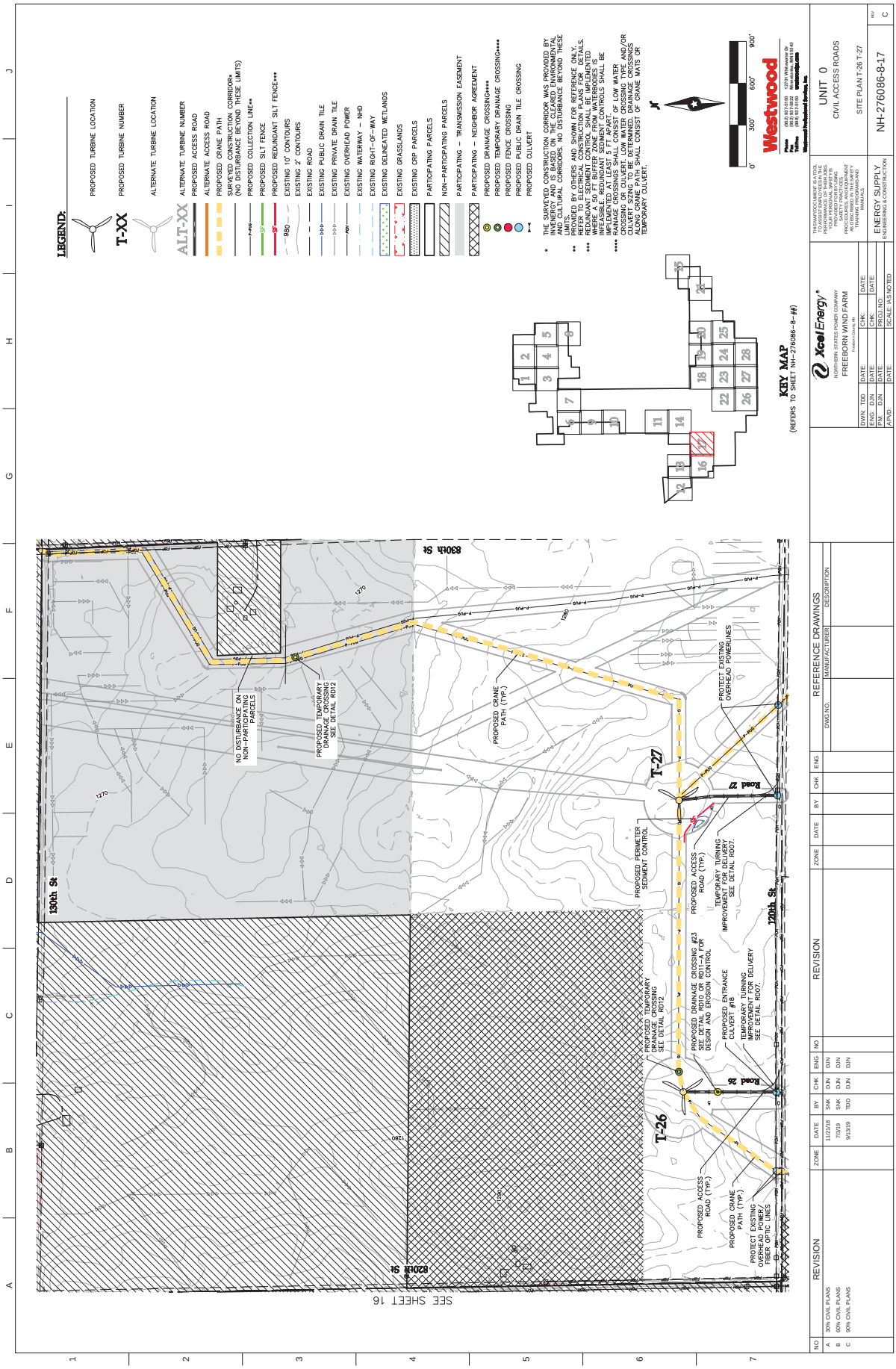
NH-276086-8-13

REV C


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE ALL OF THE BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 11
840th St
830th St
140th St
130th St
T-24
Road 24
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL R012
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CRANE PATH (TYP.)
PROPOSED DRAINAGE CROSSING #16 SEE DETAIL R010 OR R011-A FOR DESIGN AND EROSION CONTROL
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROTECT EXISTING OVERHEAD POWER LINES
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL R007.
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL R012
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED ACCESS ROAD (TYP.)
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-24
NH-276086-8-14
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REFERENCE DRAWINGS
REVISION
A 30% CIVIL PLANS
B 60% CIVIL PLANS
C 90% CIVIL PLANS


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND INCLUDES ALL REQUIRED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE ANY ELEMENT OF THE PRIMARY SEDIMENT CONTROLS IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** PARTICIPATING LANDOWNERS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ADJACENT TO CRANE PATHS SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
0' 300' 600' 900'
Westwood
Phone 952.937.5882
Toll Free 800.992.4444
Fax 952.937.5822
Website www.westwoodps.com
Email info@westwoodps.com
Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
THE MINNDOC/GOPHER ONE CALL IS NOT RESPONSIBLE FOR LOCATING YOUR PERSONAL SAFETY IS PROTECTED BY FOLLOWING SAFETY PRACTICES DESCRIBED IN THE SAFETY PRACTICES AS DESCRIBED IN THE SAFETY MANUAL AND EQUIPMENT TRAINING MANUALS.
DWN: TDD DATE: CHK: DATE:
ENG: DJN DATE: CHK: DATE:
PM: DJN DATE: PROJ. NO:
APVD: DATE: SCALE: AS NOTED
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-34
NH-276086-8-15
REV C
NO REVISION ZONE DATE BY CHK ENG NO
A 30% CIVIL PLANS 11/27/18 SMK DJN DJN
B 60% CIVIL PLANS 7/3/19 SMK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
REVISION ZONE DATE BY CHK ENG
REFERENCE DRAWINGS
DWG NO. MANUFACTURER DESCRIPTION
1400th St
900th St
Road 34
T-34
PROPOSED ENTRANCE CULVERT #24
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL R007.
PROPOSED ACCESS ROAD (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL R007.
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL R012
PROPOSED CRANE PATH (TYP.)


LEGEND:
PROPOSED TURBINE LOCATION
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE 250 FT BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 13
SEE SHEET 17
130th St
120th St
810th St
820th St
Road 25
T-25
PROTECT EXISTING FIBER OPTIC LINES
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL R012
PROPOSED CRANE PATH (TYP.)
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL R012
PROPOSED DRAINAGE CROSSING #22 SEE DETAIL R010 OR R011-A FOR DESIGN AND EROSION CONTROL
PROPOSED DRAINAGE CROSSING #21 SEE DETAIL R010 OR R011-A FOR DESIGN AND EROSION CONTROL
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL R007
PROPOSED ACCESS ROAD (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL R008-A
PROPOSED ENTRANCE CULVERT #17
NO DISTURBANCE ON NON-PARTICIPATING PARCELS
PROPOSED PERIMETER SEDIMENT CONTROL
PROTECT EXISTING OVERHEAD POWER LINES
PROTECT EXISTING OVERHEAD POWER / FIBER OPTIC LINES
REFERENCE DRAWINGS
DWG NO. MANUFACTURER DESCRIPTION
REVISION
NO ZONE DATE BY CHK ENG NO
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
DWN: TDD DATE: CHK: DATE:
ENG: DJN DATE: CHK: DATE:
PM: DJN DATE: PROJ. NO:
APVD: DATE: SCALE: AS NOTED
THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS. YOUR PERSONAL SAFETY IS PROVIDED BY THE SAFETY PRACTICES, PROCEDURES, AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS AND MANUALS.
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-25
NH-276086-8-16
REV C


LEGEND:
PROPOSED TURBINE LOCATION
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
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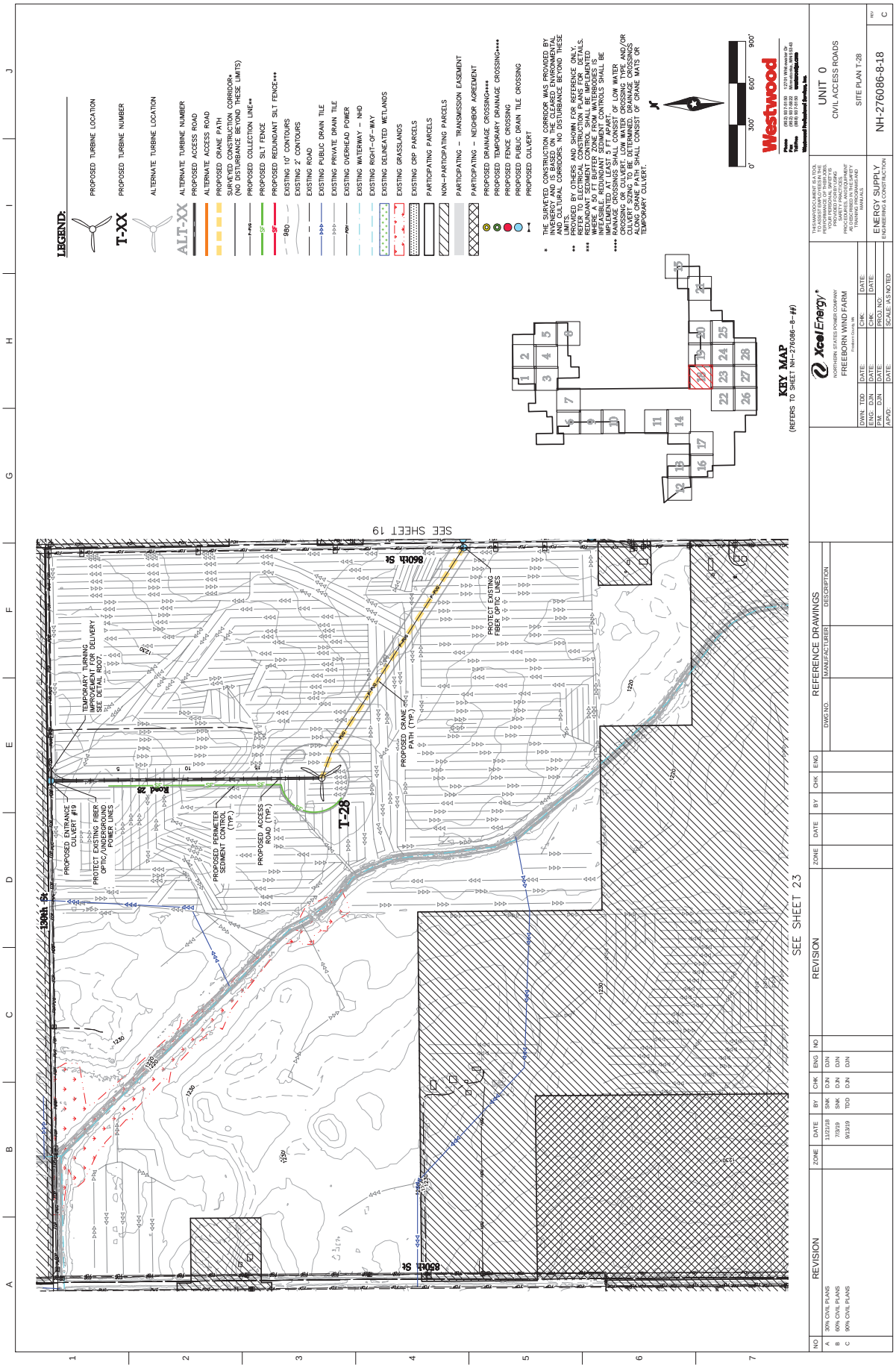
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
130th St
120th St
830th St
820th St
T-26
T-27
Road 26
Road 27
NO DISTURBANCE ON NON-PARTICIPATING PARCELS
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROPOSED CRANE PATH (TYP.)
PROTECT EXISTING OVERHEAD POWERLINES
PROPOSED PERIMETER SEDIMENT CONTROL
PROPOSED ACCESS ROAD (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED DRAINAGE CROSSING #23 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED ENTRANCE CULVERT #18
PROTECT EXISTING OVERHEAD POWER/ FIBER OPTIC LINES
SEE SHEET 16
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-26 T-27
NH-276086-8-17
ENERGY SUPPLY
REFERENCE DRAWINGS
REVISION
30% CIVIL PLANS
60% CIVIL PLANS
90% CIVIL PLANS


LEGEND:
PROPOSED TURBINE LOCATION
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
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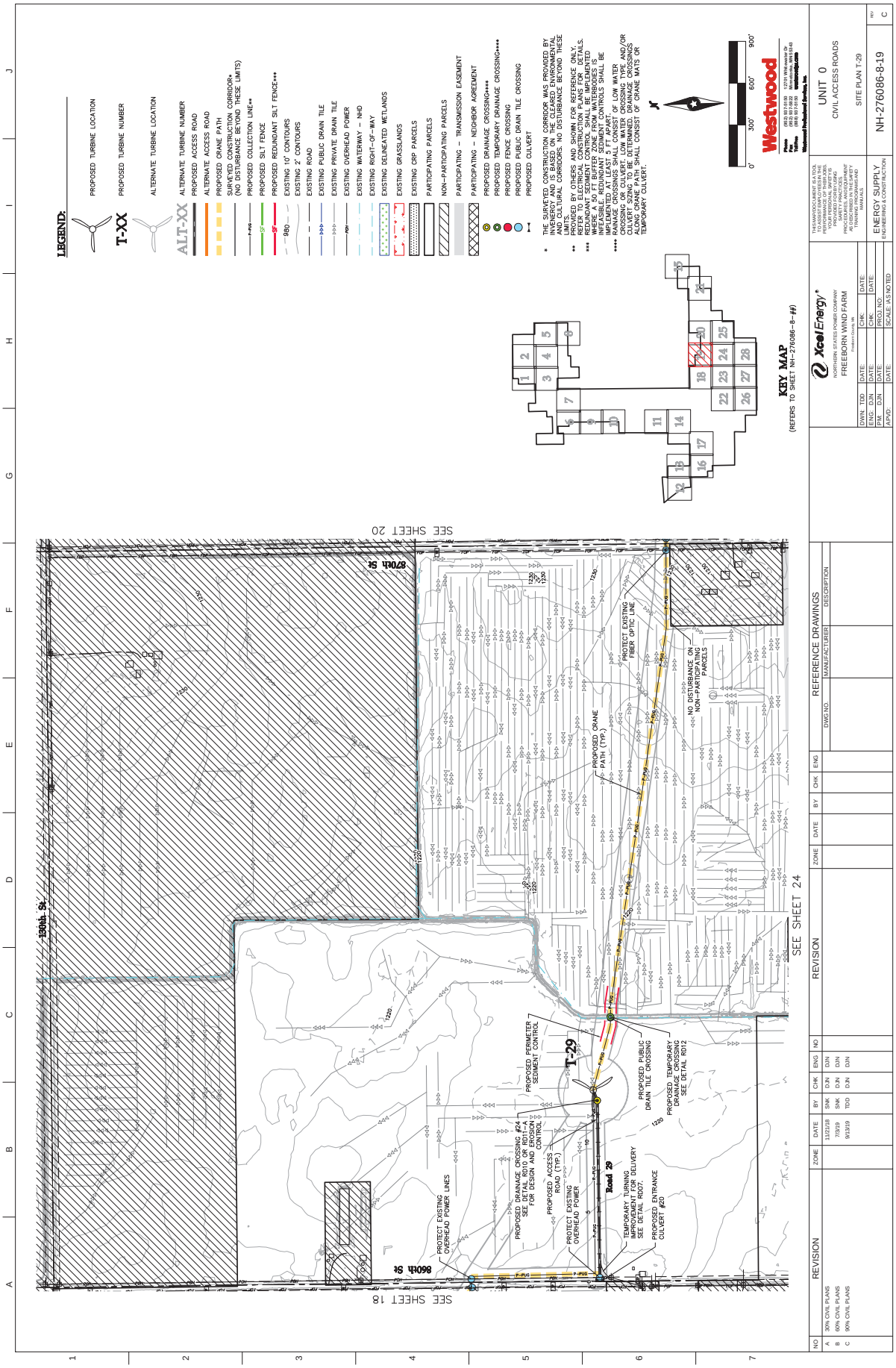
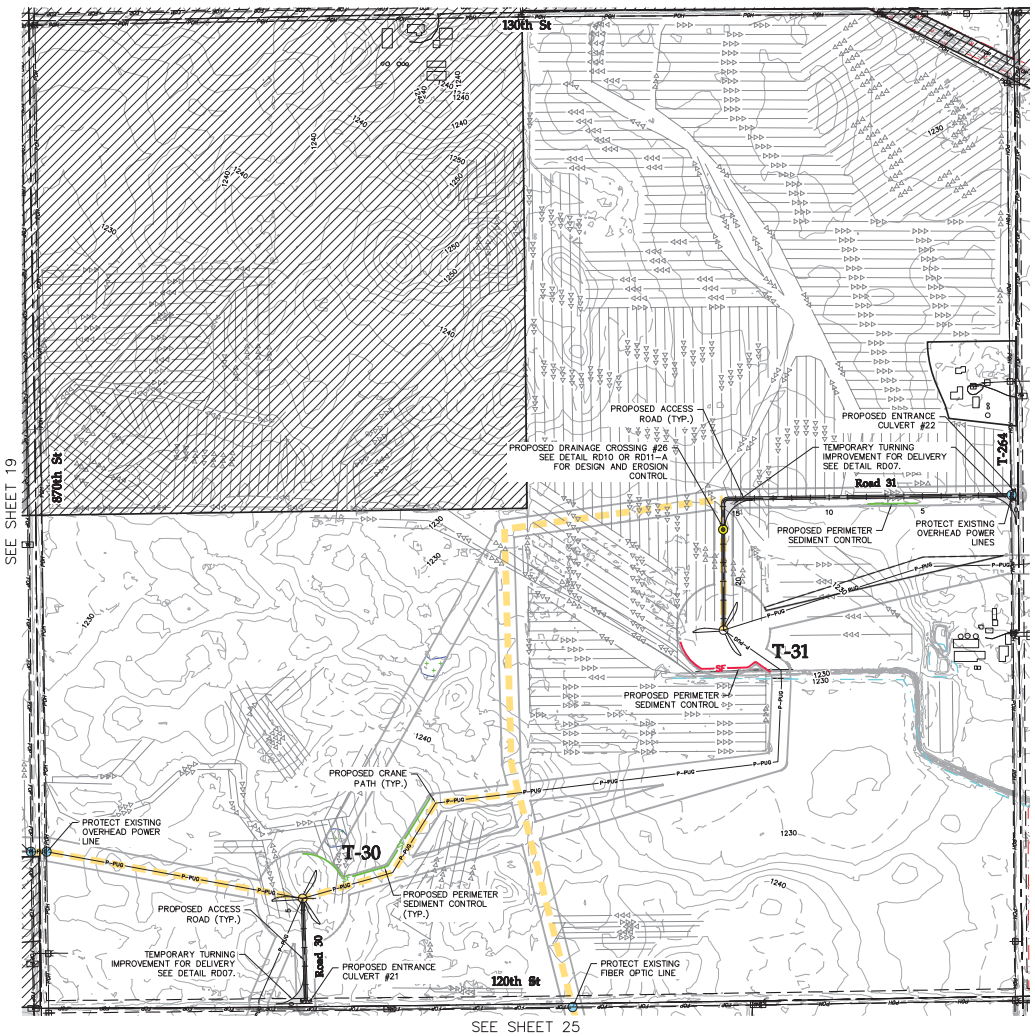
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 19
SEE SHEET 23
860th St
850th St
130th St
Road 28
T-28
PROPOSED ENTRANCE CULVERT #19
PROTECT EXISTING FIBER OPTIC/UNDERGROUND POWER LINES
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED ACCESS ROAD (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL R007.
PROPOSED CRANE PATH (TYP.)
PROTECT EXISTING FIBER OPTIC LINES
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-28
NH-276086-8-18
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REFERENCE DRAWINGS
REVISION
A 30% CIVIL PLANS
B 60% CIVIL PLANS
C 90% CIVIL PLANS


LEGEND:
PROPOSED TURBINE LOCATION
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE ALSO FOLLOWING ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 20
SEE SHEET 24
SEE SHEET 18
130th St
870th St
860th St
T-29
Road 29
PROTECT EXISTING OVERHEAD POWER LINES
PROPOSED DRAINAGE CROSSING #24 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED ACCESS ROAD (TYP.)
PROTECT EXISTING OVERHEAD POWER
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED ENTRANCE CULVERT #20
PROPOSED PERIMETER SEDIMENT CONTROL
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROPOSED CRANE PATH (TYP.)
PROTECT EXISTING FIBER OPTIC LINE
NO DISTURBANCE ON NON-PARTICIPATING PARCELS
Westwood
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-29
NH-276086-8-19
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REFERENCE DRAWINGS
REVISION
A 30% CIVIL PLANS
B 60% CIVIL PLANS
C 90% CIVIL PLANS



LEGEND:

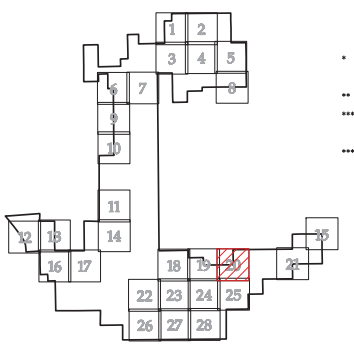
- PROPOSED TURBINE LOCATION
- T-XX — PROPOSED TURBINE NUMBER
- ALTERNATE TURBINE LOCATION
- ALT-XX — ALTERNATE TURBINE NUMBER
- PROPOSED ACCESS ROAD
- ALTERNATE ACCESS ROAD
- PROPOSED CRANE PATH
- SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
- PROPOSED COLLECTION LINE**
- PROPOSED SILT FENCE
- PROPOSED REDUNDANT SILT FENCE***
- EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- EXISTING ROAD
- EXISTING PUBLIC DRAIN TILE
- EXISTING PRIVATE DRAIN TILE
- EXISTING OVERHEAD POWER
- EXISTING WATERWAY – NHD
- EXISTING RIGHT-OF-WAY
- EXISTING DELINEATED WETLANDS
- EXISTING GRASSLANDS
- EXISTING CRP PARCELS
- PARTICIPATING PARCELS
- NON-PARTICIPATING PARCELS
- PARTICIPATING – TRANSMISSION EASEMENT
- PARTICIPATING – NEIGHBOR AGREEMENT
- PROPOSED DRAINAGE CROSSING****
- PROPOSED TEMPORARY DRAINAGE CROSSING****
- PROPOSED FENCE CROSSING
- PROPOSED PUBLIC DRAIN TILE CROSSING
- PROPOSED CULVERT

* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INVENERGY AND IS BASED ON THE CLEARED ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.

** PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.

*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE A 50 FT BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.

**** RAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.



KEY MAP
(REFERS TO SHEET NH-276086-8-##)

0' 300' 600' 900'

Westwood
Phone (952) 937-5150 12701 Whitewater Dr
Fax (952) 937-5822 Minnetonka, MN 55343
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

NO	REVISION	ZONE	DATE	BY	CHK	ENG	NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN							
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN							
C	90% CIVIL PLANS		9/13/19	TDD	DJN	DJN							

REFERENCE DRAWINGS

DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO:	
APVD:	DATE:	SCALE: AS NOTED	

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 AND MANUALS

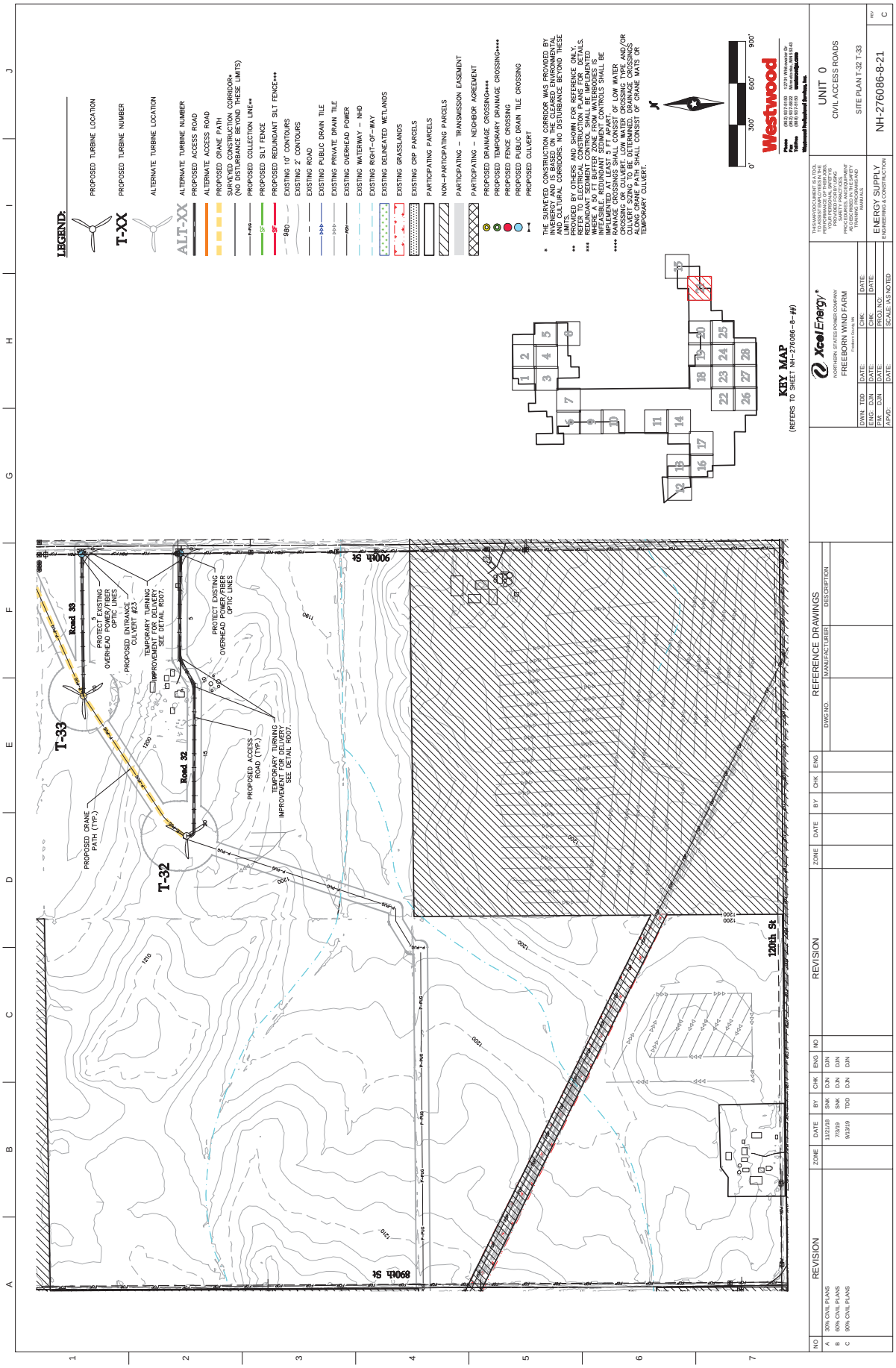
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

UNIT 0
CIVIL ACCESS ROADS

SITE PLAN T-30 T-31

NH-276086-8-20 REV C

AFCL Exhibit E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PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
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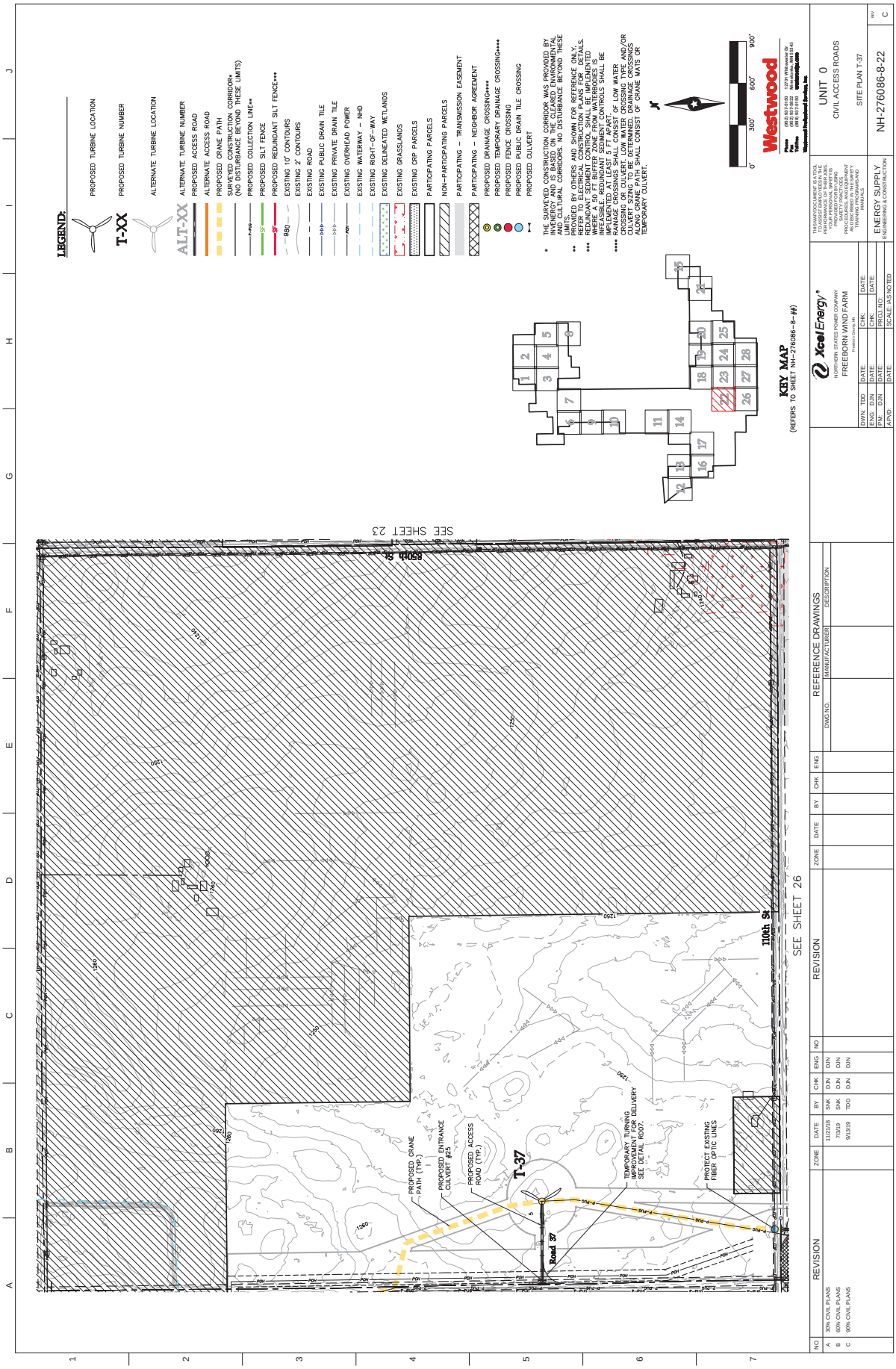
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE ALL FLOW BUFFER ZONE FROM WATERBODIES IS INFEASIBLE. REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** DRAINAGE CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
T-33
T-32
Road 33
Road 32
PROTECT EXISTING OVERHEAD POWER/FIBER OPTIC LINES
PROPOSED ENTRANCE CULVERT #23
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED ACCESS ROAD (TYP.)
PROPOSED CRANE PATH (TYP.)
900th St
890th St
120th St
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-32 T-33
NH-276086-8-21
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REFERENCE DRAWINGS
REVISION
A 30% CIVIL PLANS
B 60% CIVIL PLANS
C 90% CIVIL PLANS


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALT-XX
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
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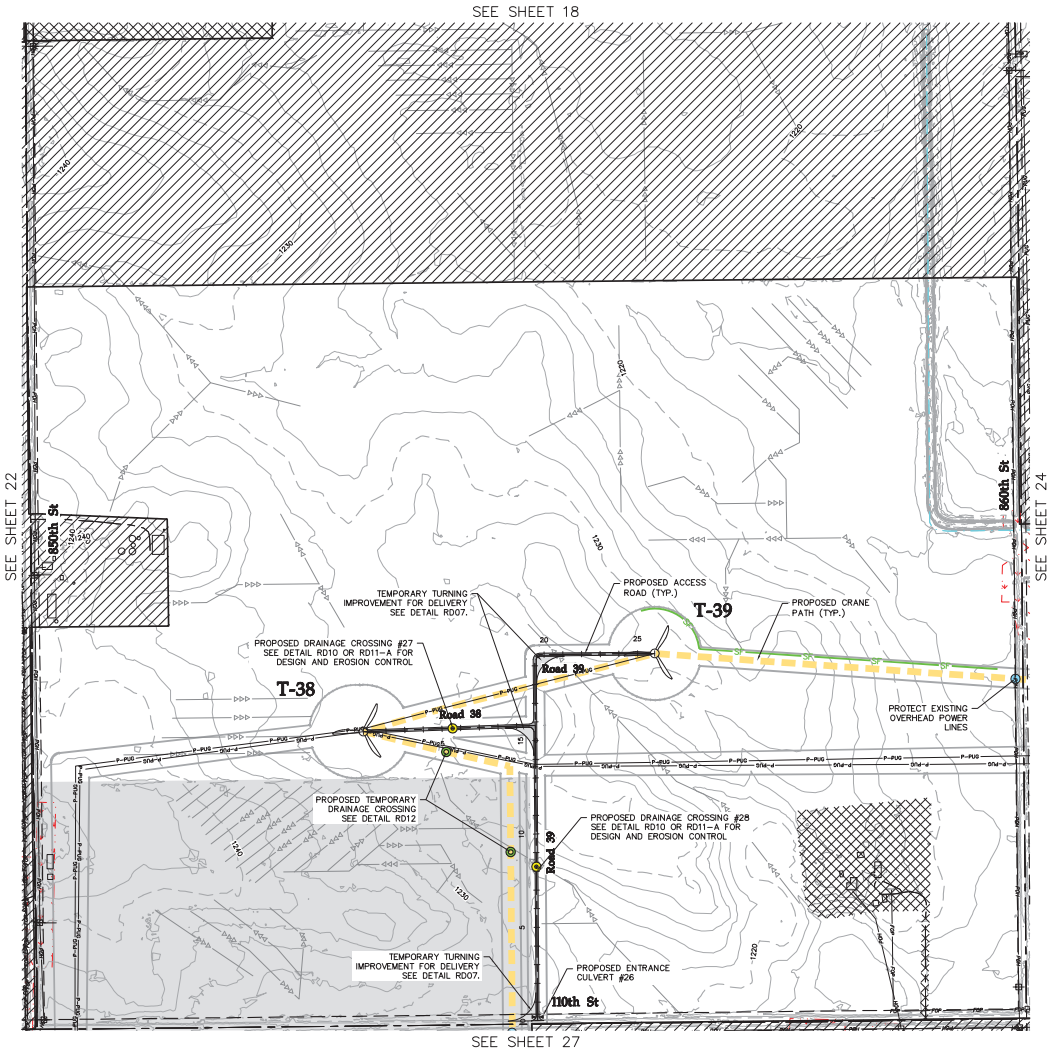
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 23
850th St
110th St
SEE SHEET 26
T-37
Road 37
PROPOSED CRANE PATH (TYP.)
PROPOSED ENTRANCE CULVERT #25
PROPOSED ACCESS ROAD (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROTECT EXISTING FIBER OPTIC LINES
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-37
NH-276086-8-22
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REFERENCE DRAWINGS
REVISION
NO
ZONE
DATE
BY
CHK
ENG
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN



LEGEND:

- PROPOSED TURBINE LOCATION
- T-XX PROPOSED TURBINE NUMBER
- ALTERNATE TURBINE LOCATION
- ALT-XX ALTERNATE TURBINE NUMBER
- PROPOSED ACCESS ROAD
- ALTERNATE ACCESS ROAD
- PROPOSED CRANE PATH
- SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
- PROPOSED COLLECTION LINE**
- PROPOSED SILT FENCE
- PROPOSED REDUNDANT SILT FENCE***
- EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- EXISTING ROAD
- EXISTING PUBLIC DRAIN TILE
- EXISTING PRIVATE DRAIN TILE
- EXISTING OVERHEAD POWER
- EXISTING WATERWAY – NHD
- EXISTING RIGHT-OF-WAY
- EXISTING DELINEATED WETLANDS
- EXISTING GRASSLANDS
- EXISTING CRP PARCELS
- PARTICIPATING PARCELS
- NON-PARTICIPATING PARCELS
- PARTICIPATING – TRANSMISSION EASEMENT
- PARTICIPATING – NEIGHBOR AGREEMENT
- PROPOSED DRAINAGE CROSSING****
- PROPOSED TEMPORARY DRAINAGE CROSSING****
- PROPOSED FENCE CROSSING
- PROPOSED PUBLIC DRAIN TILE CROSSING
- PROPOSED CULVERT

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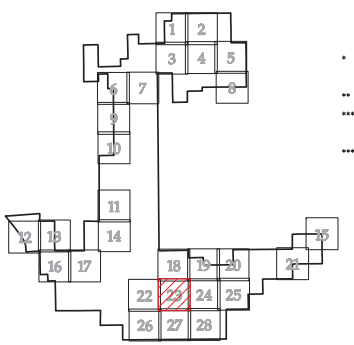

KEY MAP
(REFERS TO SHEET NH-276086-8-##)

0' 300' 600' 900'

Westwood
Phone (952) 937-5150 12701 Whitewater Dr
Fax (952) 937-5822 Minnetonka, MN 55343
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

NO	REVISION	ZONE	DATE	BY	CHK	ENG
A	30% CIVIL PLANS		11/21/18	SNK	DJN	DJN
B	60% CIVIL PLANS		7/3/19	SNK	DJN	DJN
C	90% CIVIL PLANS		9/13/19	TDD	DJN	DJN

NO	REVISION	ZONE	DATE	BY	CHK	ENG

REFERENCE DRAWINGS

DWG NO.	MANUFACTURER	DESCRIPTION

Xcel Energy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN

DWN: TDD	DATE:	CHK:	DATE:
ENG: DJN	DATE:	CHK:	DATE:
PM: DJN	DATE:	PROJ. NO:	
APVD:	DATE:	SCALE: AS NOTED	

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ENERGY SUPPLY
ENGINEERING & CONSTRUCTION

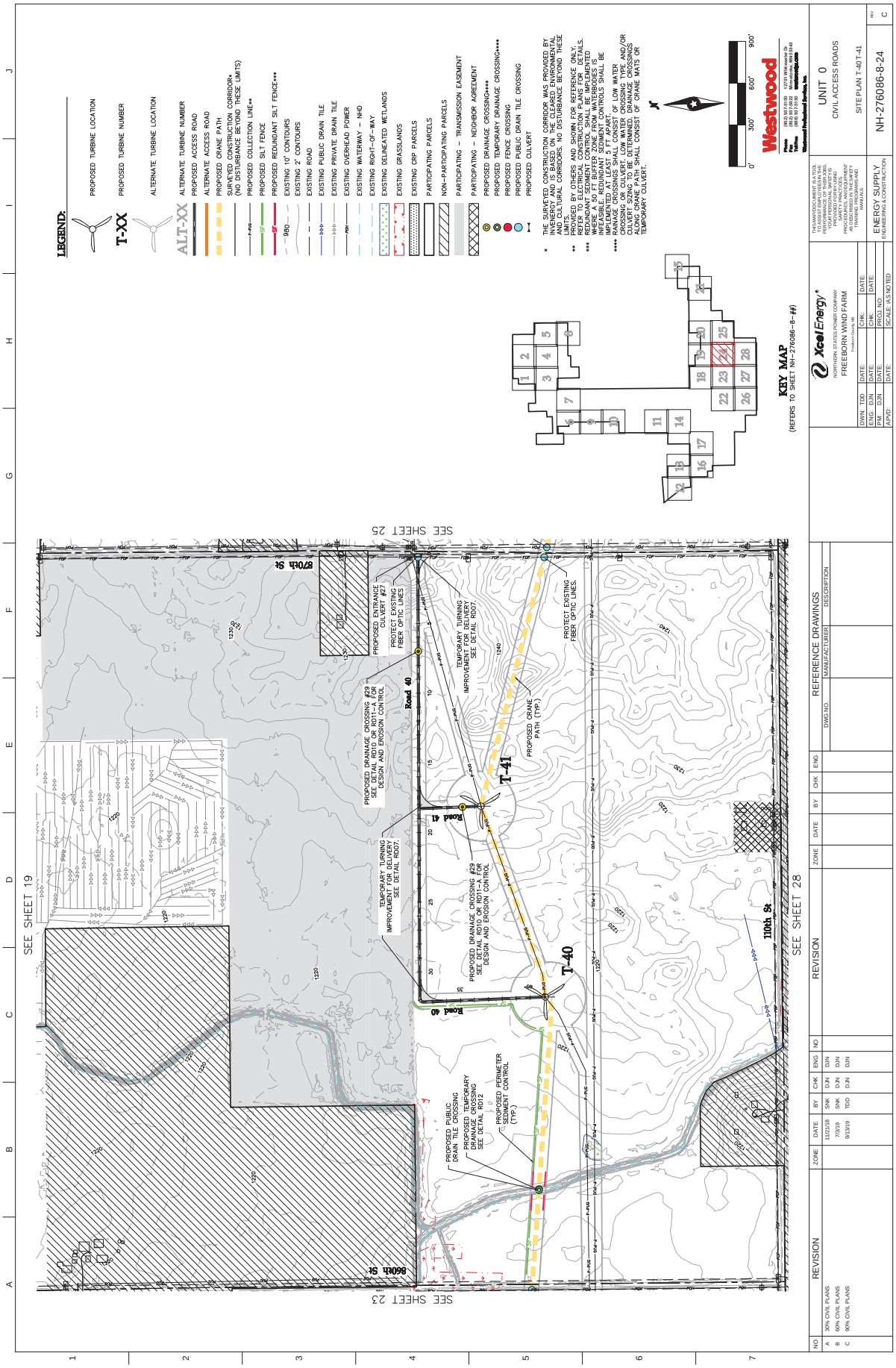
UNIT 0
CIVIL ACCESS ROADS

SITE PLAN T-38 T-39

NH-276086-8-23

REV C

AFCL Exhibit E


LEGEND:
PROPOSED TURBINE LOCATION
PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
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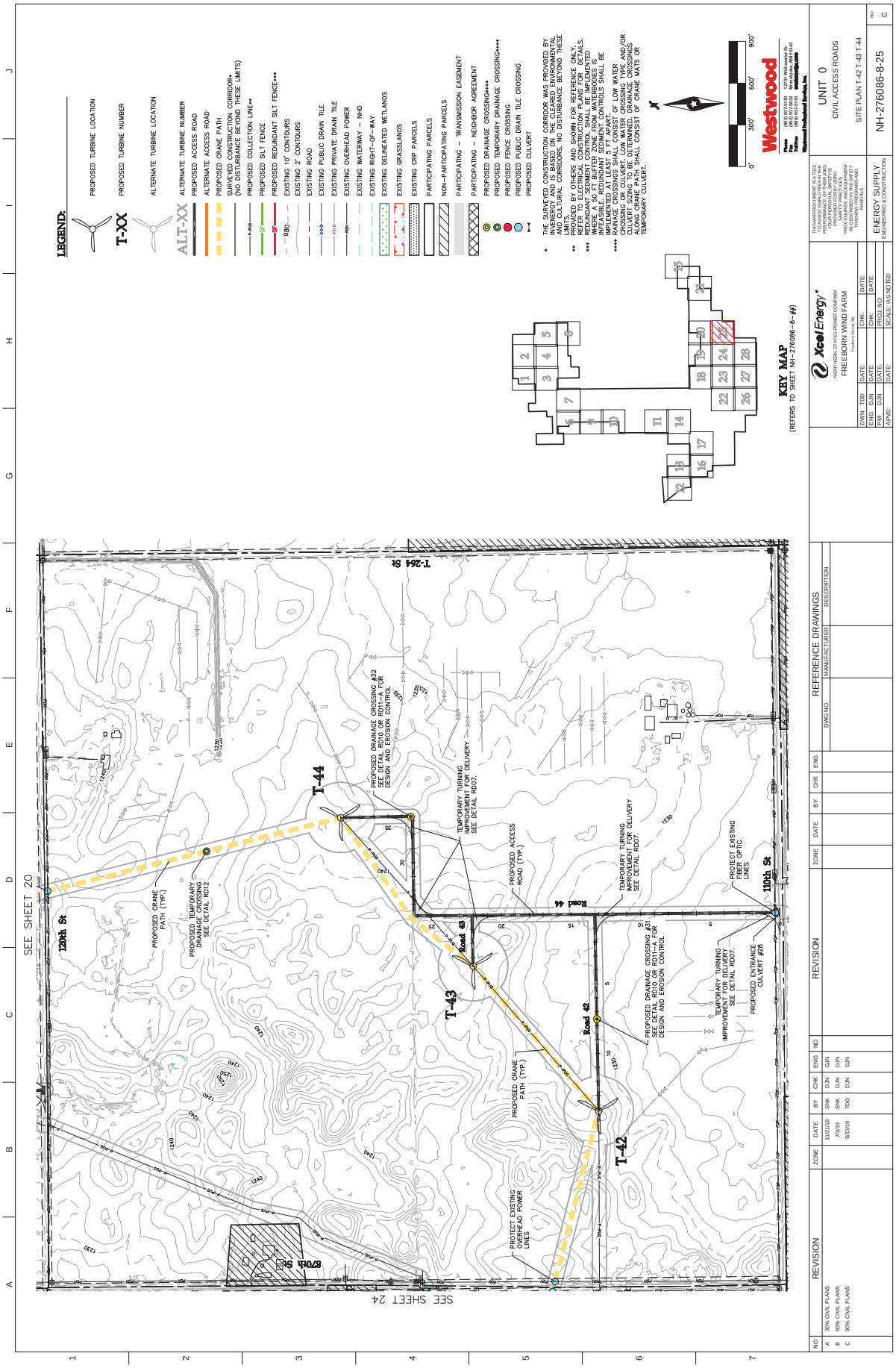
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 19
SEE SHEET 23
SEE SHEET 25
SEE SHEET 28
870th St
860th St
110th St
Road 40
Road 41
T-40
T-41
PROPOSED ENTRANCE CULVERT #27
PROTECT EXISTING FIBER OPTIC LINES
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED DRAINAGE CROSSING #29 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED CRANE PATH (TYP.)
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
Westwood
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-40 T-41
NH-276086-8-24
ENERGY SUPPLY
REFERENCE DRAWINGS
REVISION
A 30% CIVIL PLANS
B 60% CIVIL PLANS
C 90% CIVIL PLANS


LEGEND:
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PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
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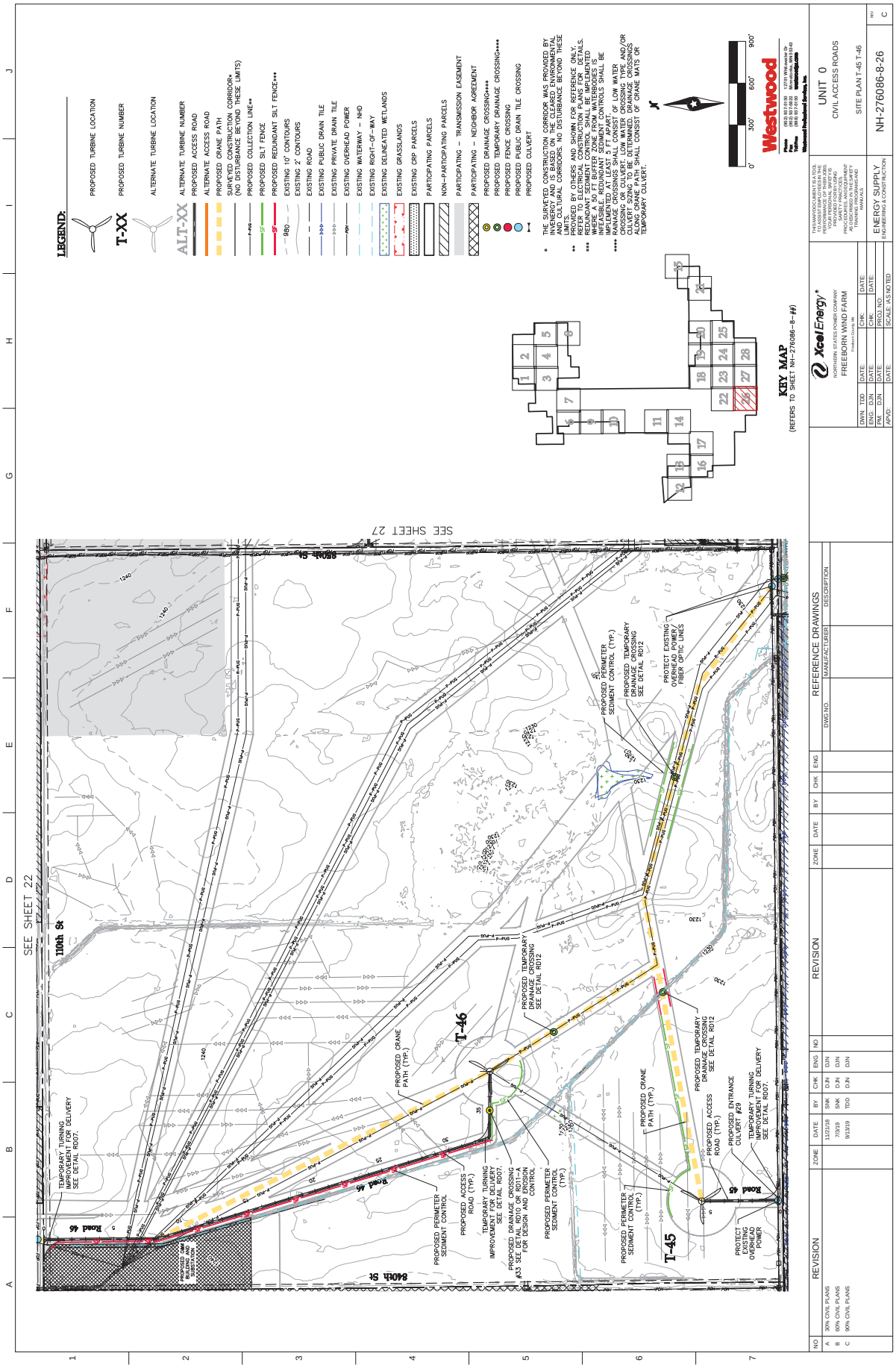
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 20
SEE SHEET 24
120th St
110th St
870th St
T-264 St
T-44
T-43
T-42
Road 44
Road 43
Road 42
PROPOSED CRANE PATH (TYP.)
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROPOSED DRAINAGE CROSSING #32 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED ACCESS ROAD (TYP.)
PROTECT EXISTING FIBER OPTIC LINES
PROPOSED DRAINAGE CROSSING #31 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED ENTRANCE CULVERT #28
PROTECT EXISTING OVERHEAD POWER LINES
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
REFERENCE DRAWINGS
DWG NO. MANUFACTURER DESCRIPTION
REVISION
NO ZONE DATE BY CHK ENG NO
A 30% CIVIL PLANS 11/21/18 SNK DJN DJN
B 60% CIVIL PLANS 7/3/19 SNK DJN DJN
C 90% CIVIL PLANS 9/13/19 TDD DJN DJN
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-42 T-43 T-44
NH-276086-8-25
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
REV C


LEGEND:
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PROPOSED TURBINE NUMBER
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
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PROPOSED FENCE CROSSING
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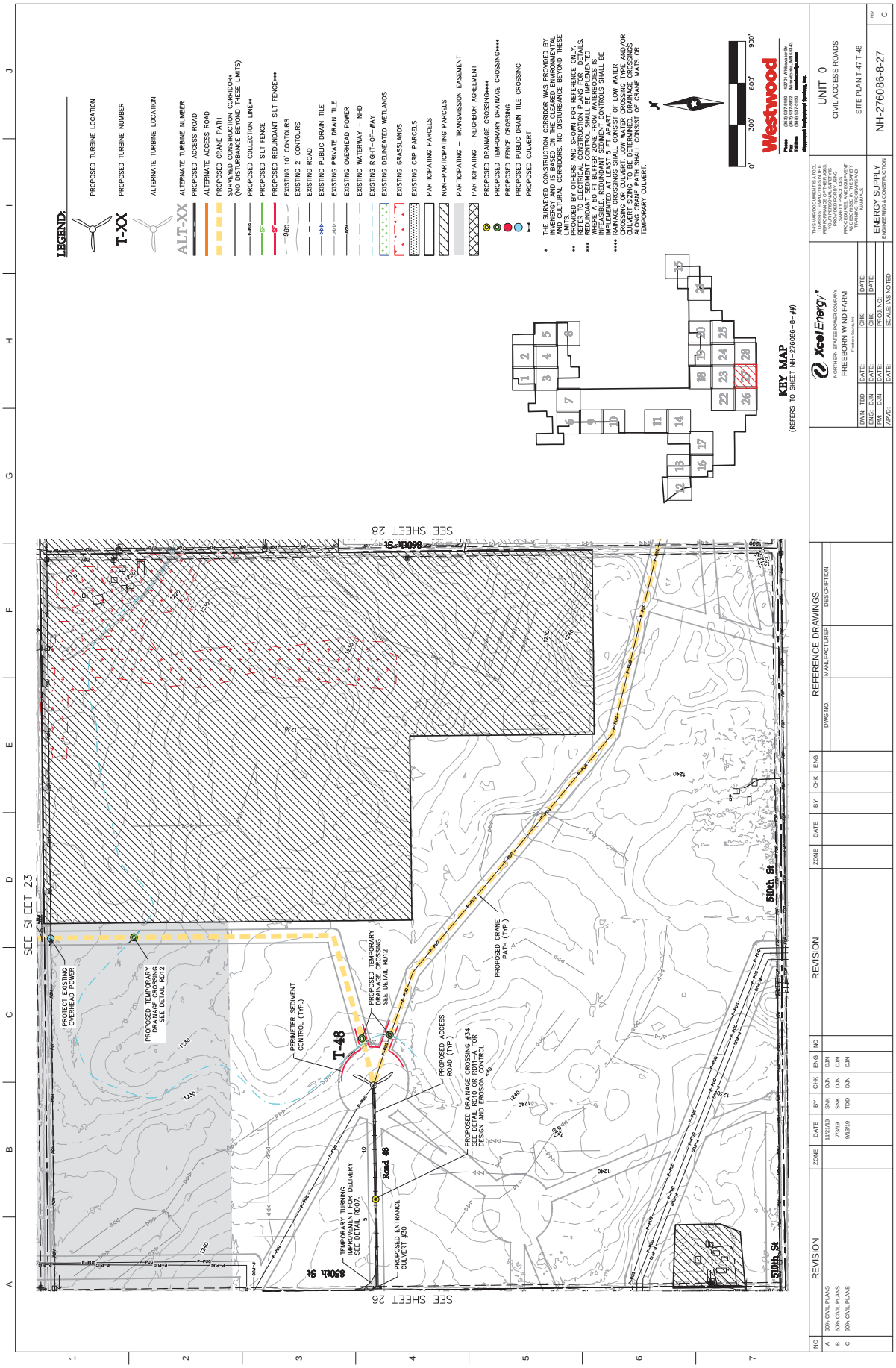
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 22
SEE SHEET 27
110th St
840th St
Road 46
Road 45
T-45
T-46
PROPOSED PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROTECT EXISTING OVERHEAD POWER/ FIBER OPTIC LINES
PROPOSED CRANE PATH (TYP.)
PROPOSED ACCESS ROAD (TYP.)
PROPOSED ENTRANCE CULVERT #29
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD07.
PROPOSED DRAINAGE CROSSING #33 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED PERIMETER SEDIMENT CONTROL
PROTECT EXISTING OVERHEAD POWER
Westwood
Xcel Energy
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-45 T-46
NH-276086-8-26
ENERGY SUPPLY
REFERENCE DRAWINGS
REVISION
A 30% CIVIL PLANS
B 60% CIVIL PLANS
C 90% CIVIL PLANS


LEGEND:
PROPOSED TURBINE LOCATION
T-XX
PROPOSED TURBINE NUMBER
ALT-XX
ALTERNATE TURBINE LOCATION
ALTERNATE TURBINE NUMBER
PROPOSED ACCESS ROAD
ALTERNATE ACCESS ROAD
PROPOSED CRANE PATH
SURVEYED CONSTRUCTION CORRIDOR* (NO DISTURBANCE BEYOND THESE LIMITS)
PROPOSED COLLECTION LINE**
PROPOSED SILT FENCE
PROPOSED REDUNDANT SILT FENCE***
EXISTING 10' CONTOURS
EXISTING 2' CONTOURS
EXISTING ROAD
EXISTING PUBLIC DRAIN TILE
EXISTING PRIVATE DRAIN TILE
EXISTING OVERHEAD POWER
EXISTING WATERWAY - NHD
EXISTING RIGHT-OF-WAY
EXISTING DELINEATED WETLANDS
EXISTING GRASSLANDS
EXISTING CRP PARCELS
PARTICIPATING PARCELS
NON-PARTICIPATING PARCELS
PARTICIPATING - TRANSMISSION EASEMENT
PARTICIPATING - NEIGHBOR AGREEMENT
PROPOSED DRAINAGE CROSSING****
PROPOSED TEMPORARY DRAINAGE CROSSING****
PROPOSED FENCE CROSSING
PROPOSED PUBLIC DRAIN TILE CROSSING
PROPOSED CULVERT
* THE SURVEYED CONSTRUCTION CORRIDOR WAS PROVIDED BY INTERESTED PARTIES BASED ON ENVIRONMENTAL AND CULTURAL CORRIDORS. NO DISTURBANCE BEYOND THESE LIMITS.
** PROPOSED BY OTHERS AND SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL CONSTRUCTION PLANS FOR DETAILS.
*** REDUNDANT SEDIMENT CONTROL SHALL BE IMPLEMENTED WHERE ANY PORTION OF THE PRIMARY, INFEASIBLE, REDUNDANT SEDIMENT CONTROLS SHALL BE IMPLEMENTED AT LEAST 5 FT APART.
**** PARALLEL CROSSINGS SHALL CONSIST OF LOW WATER CROSSING OR CULVERT. LOW WATER CROSSING TYPE AND/OR CULVERT SIZING TO BE DETERMINED. DRAINAGE CROSSINGS ALONG CRANE PATH SHALL CONSIST OF CRANE MATS OR TEMPORARY CULVERT.
0' 300' 600' 900'
Westwood
KEY MAP
(REFERS TO SHEET NH-276086-8-##)
SEE SHEET 23
SEE SHEET 26
SEE SHEET 28
T-48
Road 48
850th St
510th St
PROTECT EXISTING OVERHEAD POWER
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PERIMETER SEDIMENT CONTROL (TYP.)
PROPOSED TEMPORARY DRAINAGE CROSSING SEE DETAIL RD12
PROPOSED ACCESS ROAD (TYP.)
PROPOSED DRAINAGE CROSSING #34 SEE DETAIL RD10 OR RD11-A FOR DESIGN AND EROSION CONTROL
PROPOSED CRANE PATH (TYP.)
TEMPORARY TURNING IMPROVEMENT FOR DELIVERY SEE DETAIL RD17.
PROPOSED ENTRANCE CULVERT #30
REVISION
NO
ZONE
DATE
BY
CHK
ENG
NO
A 30% CIVIL PLANS 11/27/18 SMK D.JN D.JN
B 60% CIVIL PLANS 7/3/19 SMK D.JN D.JN
C 90% CIVIL PLANS 9/13/19 TDD D.JN D.JN
REFERENCE DRAWINGS
DWG NO.
MANUFACTURER
DESCRIPTION
XcelEnergy®
NORTHERN STATES POWER COMPANY
FREEBORN WIND FARM
Freeborn County, MN
DWN. TDD DATE:
ENG. DJN DATE:
CK. DJN DATE:
APVD: DATE:
CHK: DATE:
CHK: DATE:
PROJ. NO.
SCALE: AS NOTED
THIS MEDIA/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR DUTIES. YOUR PERSONAL SAFETY IS PARAMOUNT. FOLLOW ALL SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY MANUAL AND FIELD GUIDE MANUALS.
UNIT 0
CIVIL ACCESS ROADS
SITE PLAN T-47 T-48
ENERGY SUPPLY
ENGINEERING & CONSTRUCTION
NH-276086-8-27
REV C