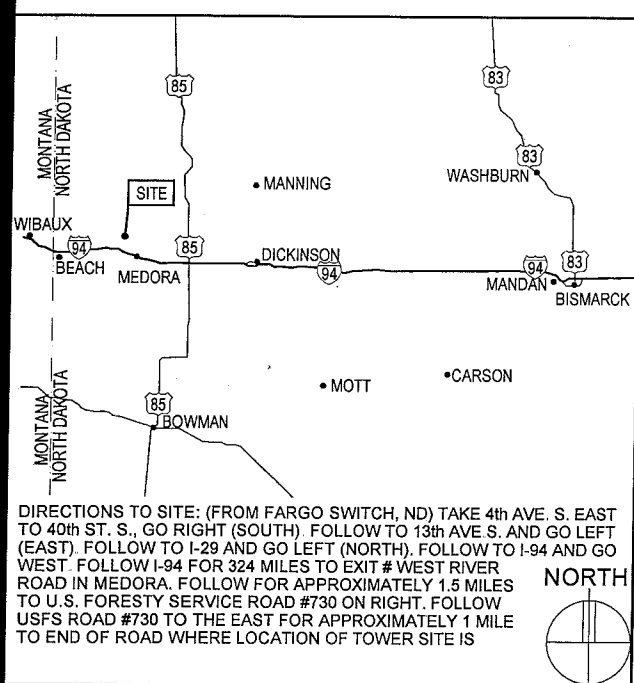


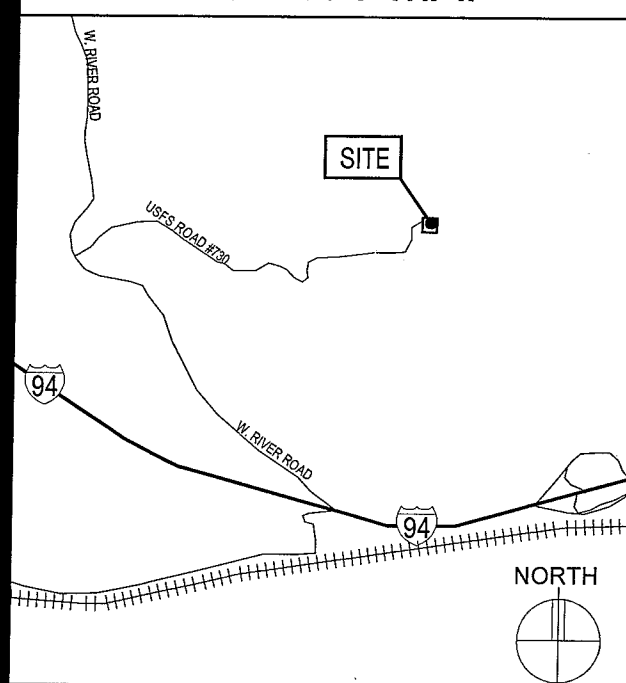
APPENDIX B: TOWER, SITE, AND ROAD SPECIFICATIONS

VERIZON WIRELESS

AREA MAP



VICINITY MAP



GENERAL NOTES

- In the event that Special Inspections are not performed in compliance with the contract terms, bid specifications and/or specified form, the General Contractor will be liable for all damages, construction performance, failures, and corrective actions related to the same.
- The following general notes shall apply to drawings and govern unless otherwise noted or specified.
- The work delineated in these drawings and described in the specifications shall conform to codes, standards and regulations that have jurisdiction in the state of NORTH DAKOTA, and the city of MEDORA.
- Requirements and regulations pertaining to R.F. safety codes and practices must be incorporated in the work even though they may not be listed individually and separately in either the drawings or the specifications.
- Compare field conditions with architectural and engineering drawings. Any discrepancies shall be directed to the Architect for clarification prior to fabrication and/or construction. Submit necessary shop drawings prior to fabrication for approval by the Architect. No information or details on these sheets may be used without the permission of the owner, or the architect.
- Do not scale drawings! 11" x 17" drawings to scale 24" x 36" drawings scale multiply by 2
- Unless otherwise shown or noted, typical details shall be used where applicable.
- Details shall be considered typical at similar conditions.
- Safety measures: The contractor shall be solely and completely responsible for the conditions of the job site, including safety of the persons and property and for independent engineering reviews of these conditions. The Architect's or Engineers' job site review is not intended to include review of the adequacy of the contractor's safety measures.
- Within these plans and specifications, "Owner" implies VERIZON WIRELESS
- The work is the responsibility of the general contractor unless noted otherwise
- The terms "contractor" and "g.c." refer to the owner's general contractor and the general contractor's sub-contractors. It is the general contractor's responsibility to determine the division of work among sub-contractors.
- General Contractor to assemble/erect/construct tower per manufacturers drawings not included in this package.

VERIZON WIRELESS DEPARTMENTAL APPROVALS

	NAME	DATE
PROJECT MANAGER	KIRSTEN HOFFOSS	11-22-04
DESIGN ENGINEER	CRAIG CIECMIEROWSKI	11-22-04
OPERATIONS MANAGER	WILSON ASHLEY	11-18-04
IMPLEMENTATION MANAGER	DERALD PRICE	11-30-04
REAL ESTATE MANAGER	NANCY FULKS	11-23-04
LESSOR / OWNER		

PROJECT INFORMATION

SITE NAME:	ND04 ROUGH RIDER
PROJECT NUMBER:	2004019518
SITE ADDRESS:	3204 EAST RIVER ROAD MEDORA, ND 58645
COUNTY:	BILLINGS
LATITUDE:	N46°56'39 68"
LONGITUDE:	W103°33'59 59"
GROUND ELEVATION:	2706 65' AMSL
ANTENNA TIP HEIGHT:	2877' AMSL-170' AGL
ANTENNA CENTERLINE HEIGHT:	2868 5' AMSL-161'-6" AGL
OVERALL STRUCTURE HEIGHT:	2905 08' AMSL- 198'-1" AGL
DRAWING BASED ON SITE DATA FORM DATED:	01-20-04
OCCUPANCY:	B
BUILDING TYPE:	V-B
SITE AREA:	75810 SQ. FT.
ROOF LOAD:	
ESTIMATED COAX RUN:	COAX RUN = (3) 7/8" LINES @ 190' EA (FOR MICROWAVE) COAX RUN = (1) EW90 ELIPTICAL @ 60' (FOR PARK SERVICE ANTENNAS) COAX RUN = (1) 7/8" LINES @ 200' COAX RUN = (2) 7/8" LINES @ 90' EA PROVIDED
PARKING:	
PROJECT DESCRIPTION:	

INSTALL NEW 180' GUYED TOWER AND 12' X 30' EQUIPMENT SHELTER.
INSTALL COAX FOR NEW ANTENNAS AND EXISTING PARK SERVICE ANTENNAS.
RELOCATE EXISTING PARK SERVICE ANTENNAS AND INSTALL NEW VERIZON WIRELESS ANTENNAS. DEMOLITION AND DISPOSE OF EXISTING PARK SERVICE TOWER AND COAX. THIS INSTALLATION IS TO INCREASE COVERAGE IN THE THEODORE ROOSEVELT NATIONAL PARK, MEDORA AND THE ADJACENT I-94 CORRIDOR AREAS.

SHEET INDEX

SHEET	SHEET DESCRIPTION
T-1	PROJECT INFORMATION, MAPS, DIRECTIONS, AND SHEET INDEX
A-1	SITE PLAN
A-2	ENLARGED SITE PLAN
A-3	TOWER ELEVATION, COAX AND ANTENNA KEY, NOTES, AND DETAILS
A-4	PREFABRICATED BUILDING PLANS, ELEVATIONS, NOTES, & DETAILS
A-5	MISCELLANEOUS DETAILS
A-6	SPECIFICATIONS
G-1	GROUNDING PLAN AND NOTE KEY
G-2	GROUNDING NOTES AND DETAILS
E-1	ELECTRICAL PLAN, NOTES, AND DETAILS
C1-C6	ACCESS ROAD DETAILS, NOTES, QUANTITIES, PLAN & PROFILE
X1-X22	ACCESS ROAD CROSS SECTIONS
	SURVEY
	SPECIAL INSPECTIONS FORM

ISSUE SUMMARY

REV.	DESCRIPTION	SHEET OR DETAIL
A	ISSUED FOR REVIEW 11-03-04	ALL
B	ISSUED FOR OWNER SIGNOFF 1-3-05	ALL
C	ISSUED FOR OWNER SIGNOFF 3-7-05	ALL

CONTACTS

LESSOR:	THEODORE ROOSEVELT NATIONAL PARK
LESSEE:	VALERIE NAYLOR 701-623-4466 VERIZON WIRELESS 9955 59TH AVENUE NORTH SUITE #120 PLYMOUTH, MN 55442 KIRSTEN HOFFOSS 612-720-0046
POWER UTILITY COMPANY CONTACT:	WEST PLAINS ELECTRIC COOPERATIVE INC. JERRY KRABS PO BOX 1038 DICKINSON, ND 58602 701-483-5111
TELCO UTILITY COMPANY CONTACT:	N/A
ARCHITECT:	DESIGN 1 OF EDINA, LTD. 9973 VALLEY VIEW ROAD EDEN PRAIRIE, MN 55344 (952) 903-9299
SURVEYOR:	ULTEIG ENGINEERS, INC. 1412 BASIN AVE. BISMARCK, ND 58504 701-258-6507
STRUCTURAL ENGINEER:	N/A
GEOTECHNICAL ENGINEER:	TETRA-TECH INC. 2001 KILLEBREW DRIVE SUITE 141 BLOOMINGTON, MN 55425 KIM GORMAN 612-643-2224

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly Licensed Professional Engineer under the laws of the State of North Dakota. ROBERT J. DAVIS, Reg. No. 1228

DESIGN 1
OF EDINA, LTD.
ARCHITECT
9973 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55344
(952) 903-9299 FAX 903-9292

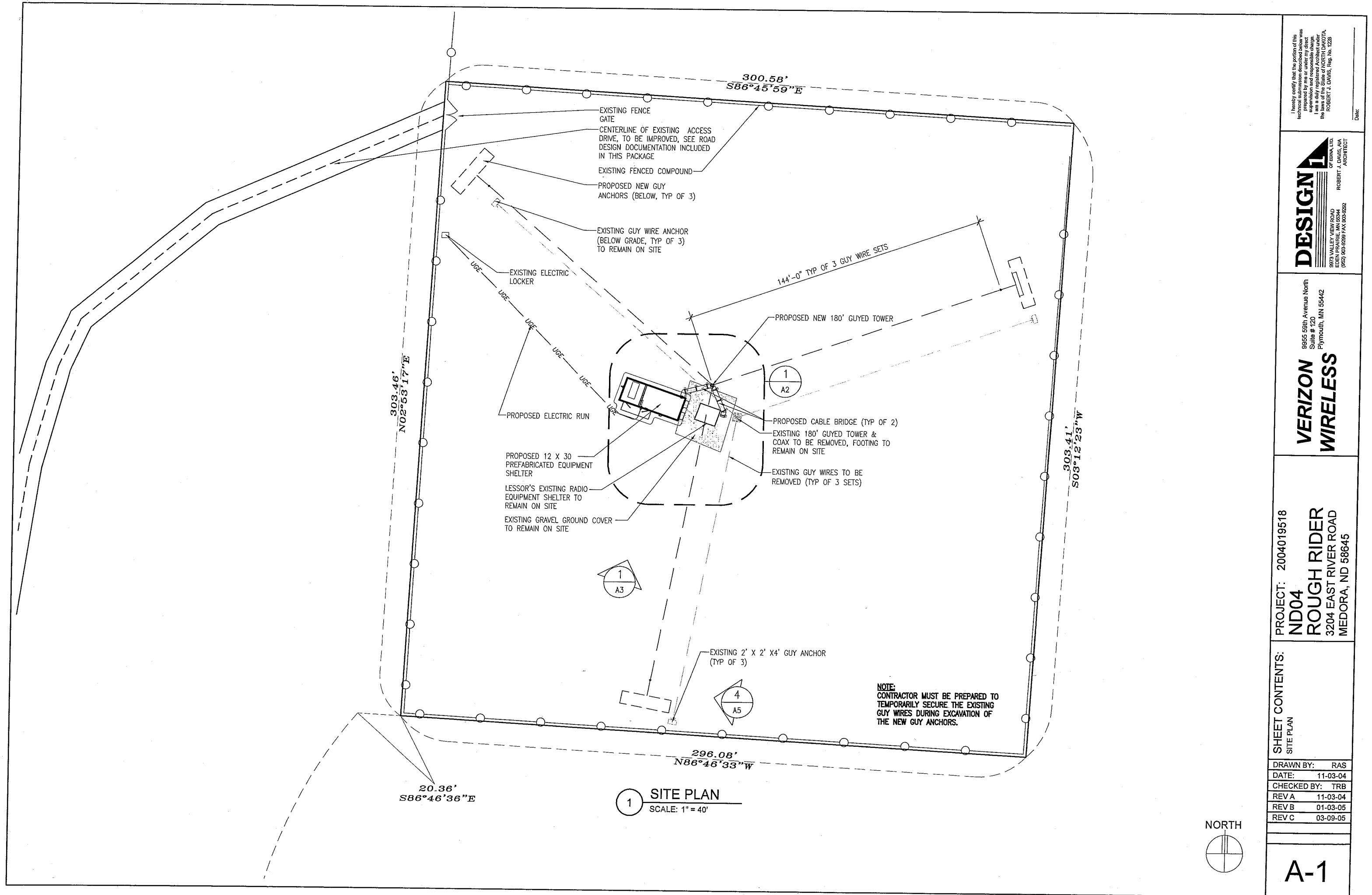
9955 59th Avenue North
Suite # 120
Plymouth, MN 55442
**VERIZON
WIRELESS**

PROJECT: 2004019518
**ND04
ROUGH RIDER**
3204 EAST RIVER ROAD
MEDORA, ND 58645

SHEET CONTENTS:
SHEET INDEX
REVIEWS SUMMARY
CONTACTS
PROJECT INFORMATION
DEPARTMENTAL APPROVALS
DIRECTIONS & LOCATION
AREA & VICINITY MAPS

DRAWN BY: RAS
DATE: 11-03-04
CHECKED BY: TRB
REV A 11-03-04
REV B 01-03-05
REV C 03-09-05

T-1



I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly Licensed Professional Engineer in the State of North Dakota. ROBERT J. DAVIS, Reg. No. 1228

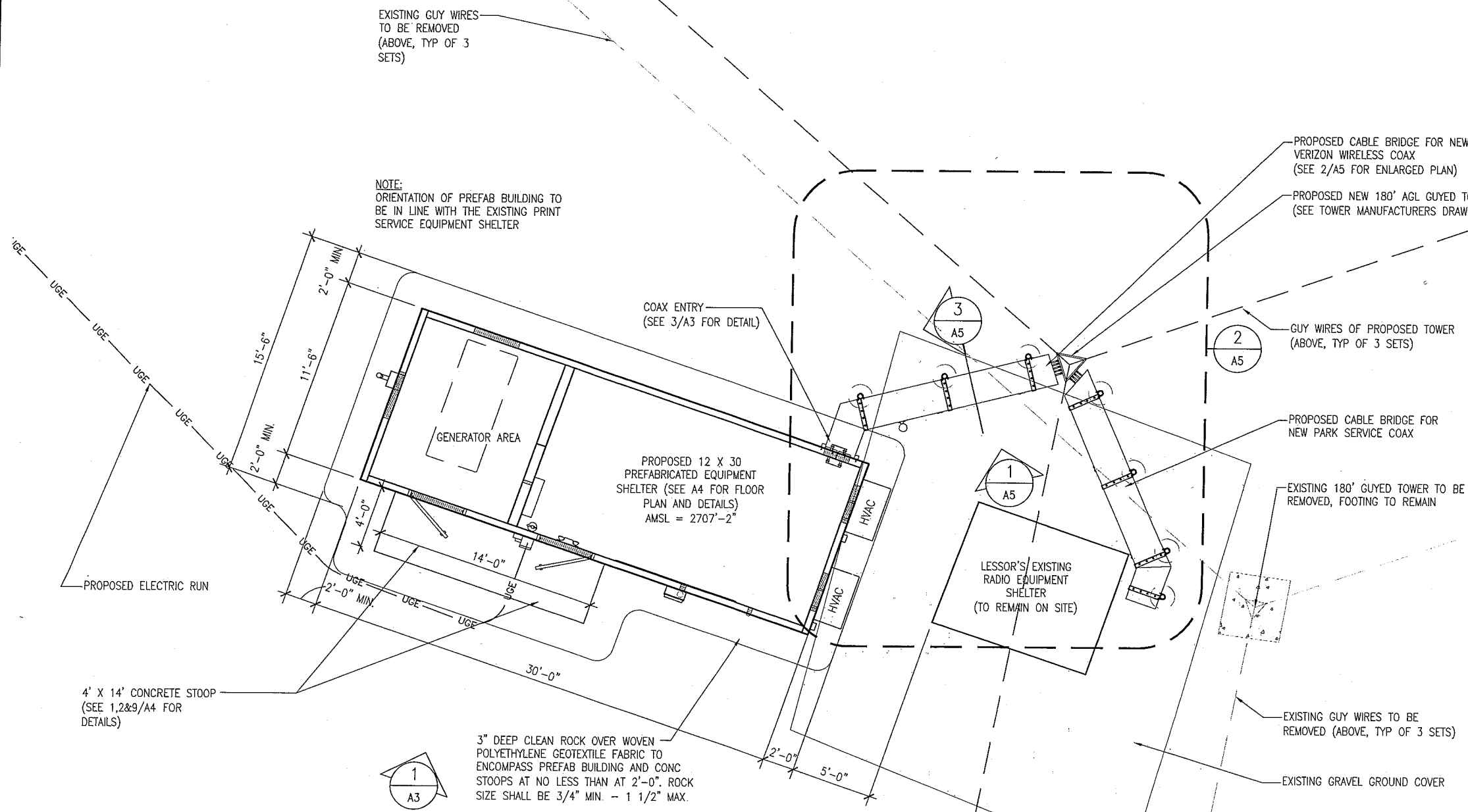
DESIGN
OF BONA, LTD.
ROBERT J. DAVIS, P.E.
ARCHITECT
9073 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55444
(952) 903-9289 FAX 903-5292

9955 59th Avenue North
Suite # 120
Plymouth, MN 55442
VERIZON
WIRELESS

PROJECT: 2004019518
ND04
ROUGH RIDER
3204 EAST RIVER ROAD
MEDORA, ND 58645

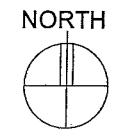
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SITE PLAN	
DRAWN BY:	RAS
DATE:	11-03-04
CHECKED BY:	TRB
REV A	11-03-04
REV B	01-03-05
REV C	03-09-05

A-1



NOTE:
CONTRACTOR MUST BE PREPARED TO
TEMPORARILY SECURE THE EXISTING
GUY WIRES DURING EXCAVATION OF
THE NEW GUY ANCHORS.

1 ENLARGED SITE PLAN
SCALE: 1/8" = 1'-0"



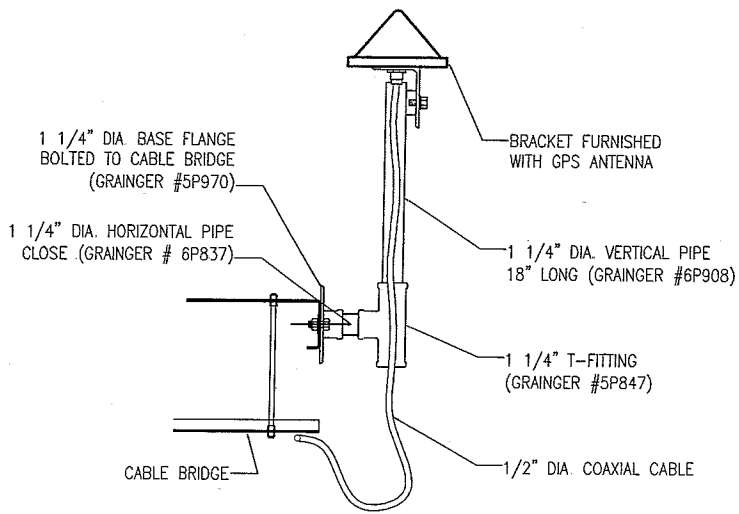
I hereby certify that the portion of this technical submission described herein was prepared by me or under my direct supervision and responsible charge. I am a duly registered Architect under the laws of the State of North Carolina. ROBERT J. DAVIS, Reg. No. 1228

DESIGN 1
OF EDNA LTD.
ROBERT J. DAVIS, AIA
ARCHITECT
8970 VALLEY VIEW ROAD
EDNA, PRINCE GEORGE, PA
(952) 903-5289 FAX 903-5292

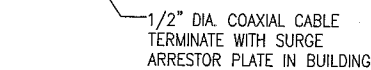
VERIZON WIRELESS
9955 59th Avenue North
Suite # 120
Plymouth, MN 55442

PROJECT: 2004019518
ND04
ROUGH RIDER
3204 EAST RIVER ROAD
MEDORA, ND 58645

SHEET CONTENTS: ENLARGED SITE PLAN	
DRAWN BY:	RAS
DATE:	11-03-04
CHECKED BY:	TRB
REV A	11-03-04
REV B	01-03-05
REV C	03-09-05



7 GPS MOUNTING DETAIL
SCALE: 3/4" = 1'-0"



6 GPS ELEVATION
SCALE: 3/4" = 1'-0"

ELEV. 197'-0" AGL / 2903.82' AMSL
PARK SERVICE ANTENNA TIP

RELOCATED PARK SERVICE
RADIO ANTENNA

ELEV. 180'-0" AGL / 2886.55' AMSL
TOP OF TOWER

ELEV. 170'-0" AGL / 2876.55' AMSL
ANTENNA TIP HEIGHT

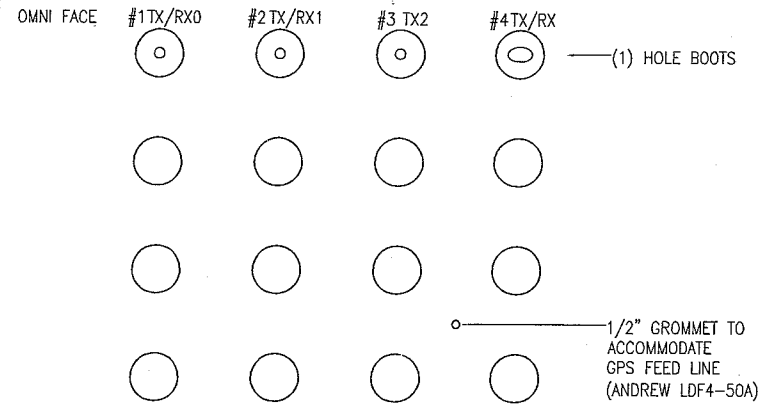
ELEV. 161'-3" AGL / 2867.8' AMSL
RADOME CENTER

ANTENNA KEY										
	AZIMUTH	NUMBER	FUNCTION	MANUFACTURER	MODEL	TYPE	ANTENNA LENGTH	ANTENNA TIP HEIGHT	ANTENNA C HEIGHT	ELECTRICAL DOWNTILT
OMNI FACE	0°	#1	TX/RX0	ANTEL	BCD-80612	MIXED	230"	170'-0"	161'-3"	-
	0°	#2	TX/RX1	ANTEL	BCD-80612	MIXED	230"	170'-0"	161'-3"	-
	0°	#3	TX2	ANTEL	BCD-80612	ANALOG	230"	170'-0"	161'-3"	-
MICROWAVE	260°	#4	RX/TX	ANDREW	VHLP4-105	MICROWAVE	4'0"	N/A	60'-0"	-
PARK SERVICE	0°			EXISTING WHIP	EXISTING	EXISTING	EXISTING	197'+/-	188'-6'+/-	-
	MATCH EXIST			EXISTING YAGGI	EXISTING	EXISTING	EXISTING	N/A	70'-0"	-
	MATCH EXIST			EXISTING YAGGI	EXISTING	EXISTING	EXISTING	N/A	63'-0"	-

RX FILTER = (2) L3 (NARDA) AFB21A838401
DUPLEXER = (2) L3 (NARDA) AFD21A838901

EXISTING PARK SERVICE ANTENNA TO BE RELOCATED ON NEW TOWER
PROPOSED VERIZON WIRELESS ANTENNAS, TYP OF 3
3' STAND OFF MOUNT KIT SABRE PART# C10-151-001 (TYP OF 3)

4 ANTENNA KEY
SCALE: NONE

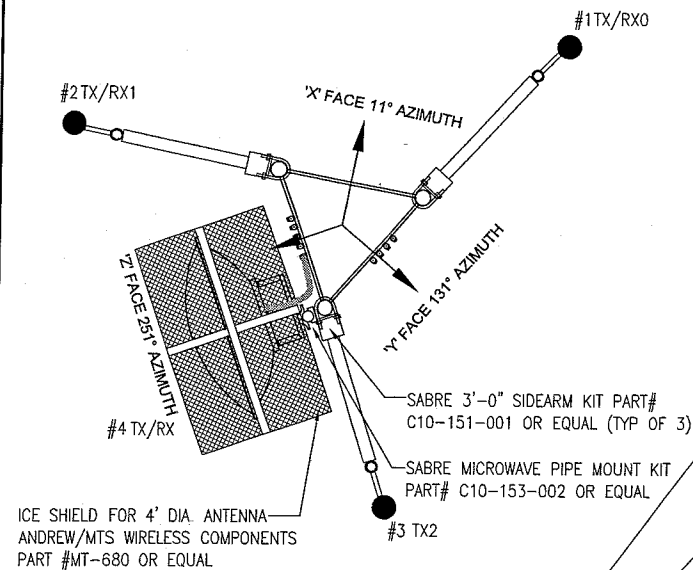


3 COAX ENTRY DETAIL (VIEW FROM INSIDE)
SCALE: NONE

VERIZON COAX KEY					
COAX TYPE	MANUFACTURER	MODEL	DIELECTRIC	DIAMETER (INCH)	RUN (FEET)
MAIN	ANDREW	LDF5-50A	FOAM	7/8"	190'
MAIN	ANDREW	LDF5-50A	FOAM	7/8"	190'
MAIN	ANDREW	LDF5-50A	FOAM	7/8"	190'
MAIN	ANDREW	EW90	FOAM	1-1/4"	60'

PARK SERVICE COAX KEY					
COAX TYPE	MANUFACTURER	MODEL	DIELECTRIC	DIAMETER (INCH)	RUN (FEET)
MAIN	ANDREW	LDF5-50A	FOAM	7/8"	200'
MAIN	ANDREW	LDF5-50A	FOAM	7/8"	90'
MAIN	ANDREW	LDF5-50A	FOAM	7/8"	85'

2 COAX KEY
SCALE: NONE



5 ANTENNA MOUNTING DETAIL
SCALE: 1/8" = 1'-0"

RELOCATED PARK SERVICE ANTENNAS

ELEV. 70'-0" AGL / 2876.5' AMSL
PARK SERVICE ANTENNA

ELEV. 63'-0" AGL / 2769.5' AMSL
PARK SERVICE ANTENNA

ELEV. 60'-0" AGL / 2866.5' AMSL
MICROWAVE RADOME CENTER

ICE SHIELD FOR 4' DIA. ANTENNA
ANDREW/MTS WIRELESS COMPONENTS
PART #MT-680 OR EQUAL

EXISTING PARK SERVICE ANTENNAS
TO BE RELOCATED ON NEW TOWER

7/8" COAX MOUNTED WITH SNAP-IN
HANGERS, ANDREW PART# SSH-78

EW90 WAVEGUIDE MOUNTED WITH SNAP-IN
HANGERS, ANDREW PART# EWSH-90

PROPOSED VERIZON WIRELESS
CABLE BRIDGE (BEYOND)

ELEV. 0'-0" AGL / 2706.55' AMSL
BASE OF TOWER

OBLIQUE

PROPOSED VERIZON WIRELESS EQUIPMENT SHELTER

EXISTING 180' GUYED TOWER
TO BE REMOVED

EXISTING WILDLIFE FENCING (BEYOND)

EXISTING TOWER FOUNDATION TO REMAIN

EXISTING PARK SERVICE RADIO SHELTER

1 ELEVATION
SCALE: 1" = 20'

I hereby certify that the portion of this technical submission described herein was prepared by me or under my direct supervision and responsible charge. I am a duly registered Architect under the laws of the State of North Carolina. ROBERT J. DAVIS, Reg. No. 1228

DESIGN 1
ARCHITECT
8893 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55424
(952) 933-9286 FAX 952-9282

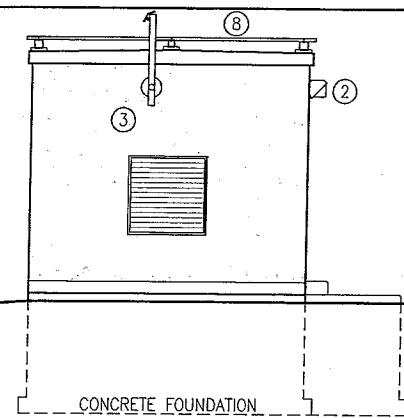
VERIZON WIRELESS
8855 59th Avenue North
Suite # 120
Plymouth, MN 55442

PROJECT: 2004019518
ND04 ROUGH RIDER
3204 EAST RIVER ROAD
MEDORA, ND 58645

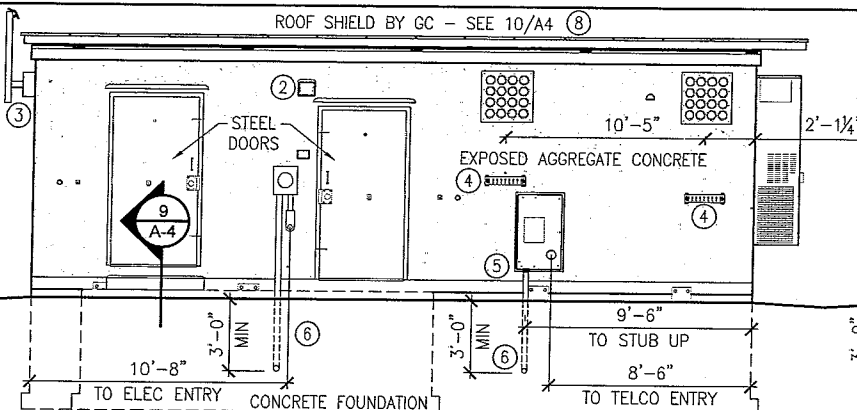
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COAX KEY
COAX ENTRY DETAIL
ANTENNA MOUNTING DETAIL
ANTENNA KEY
GPS MOUNTING DETAIL
GPS ELEVATION

DRAWN BY: RAS
DATE: 11-03-04
CHECKED BY: TRB
REV A 11-03-04
REV B 01-03-05
REV C 03-09-05

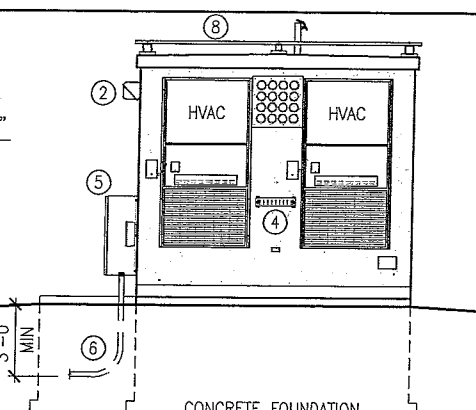
A-3



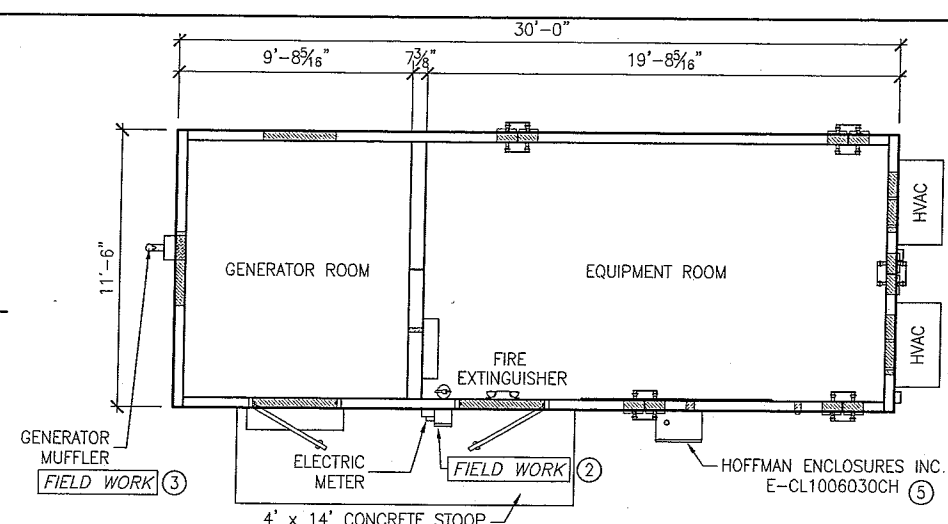
6 LEFT ELEVATION
SCALE: 1/8" = 1'-0"



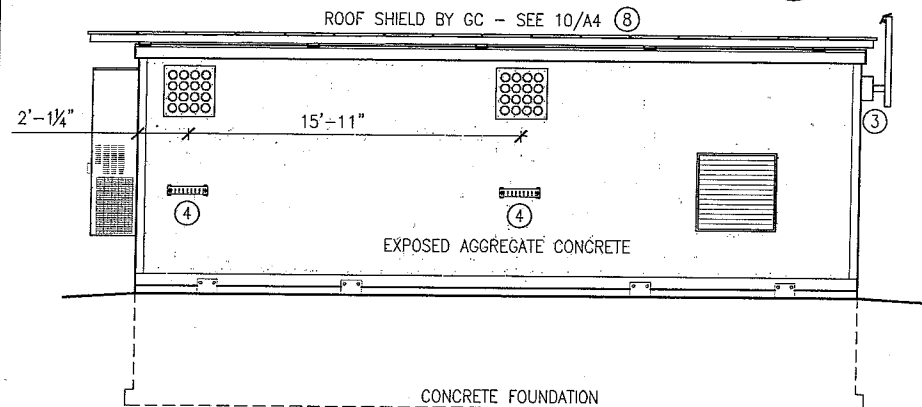
5 FRONT ELEVATION
SCALE: 1/8" = 1'-0"



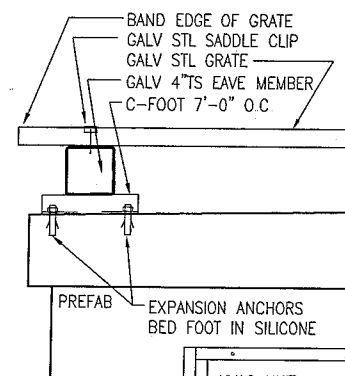
4 RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



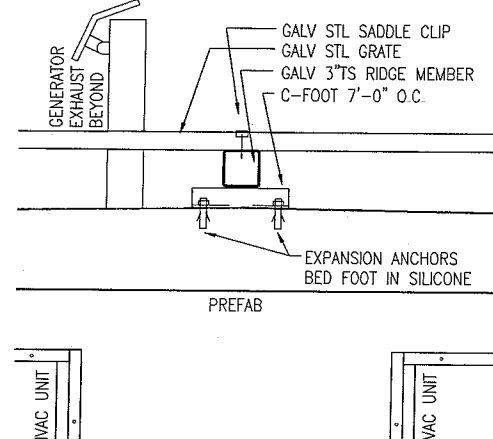
3 FLOOR PLAN
SCALE: 1/8" = 1'-0"



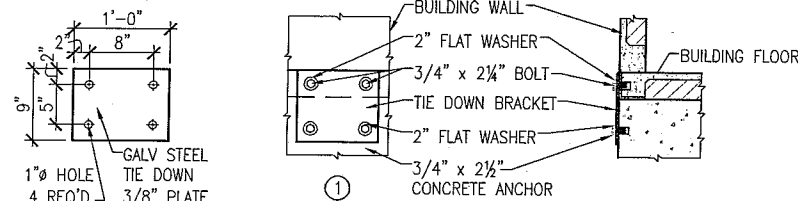
7 BACK ELEVATION
SCALE: 1/8" = 1'-0"



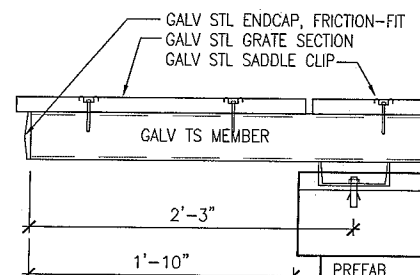
13 TYPICAL EAVE
SCALE: 3/4" = 1'-0"



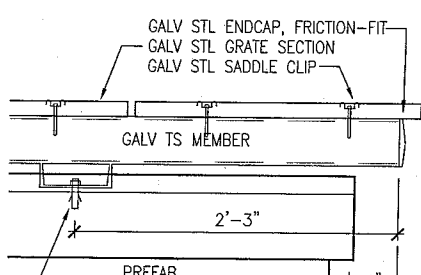
12 TYPICAL RIDGE
SCALE: 3/4" = 1'-0"



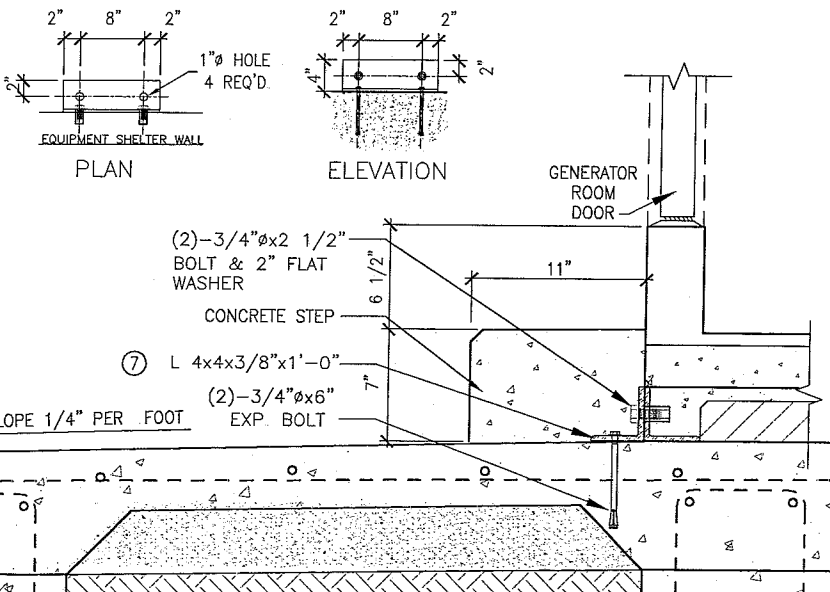
8 ANCHORING DETAILS
SCALE: 1/2" = 1'-0"



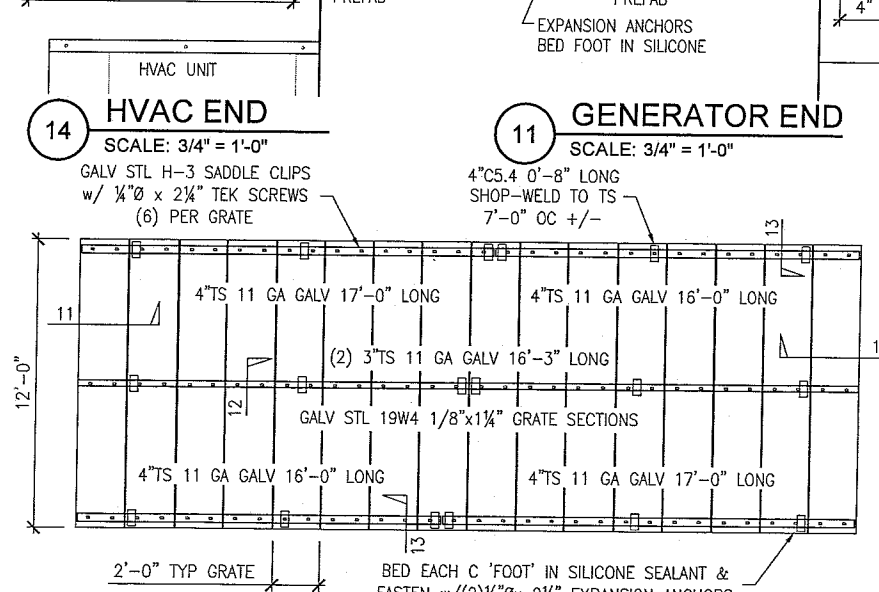
14 HVAC END
SCALE: 3/4" = 1'-0"



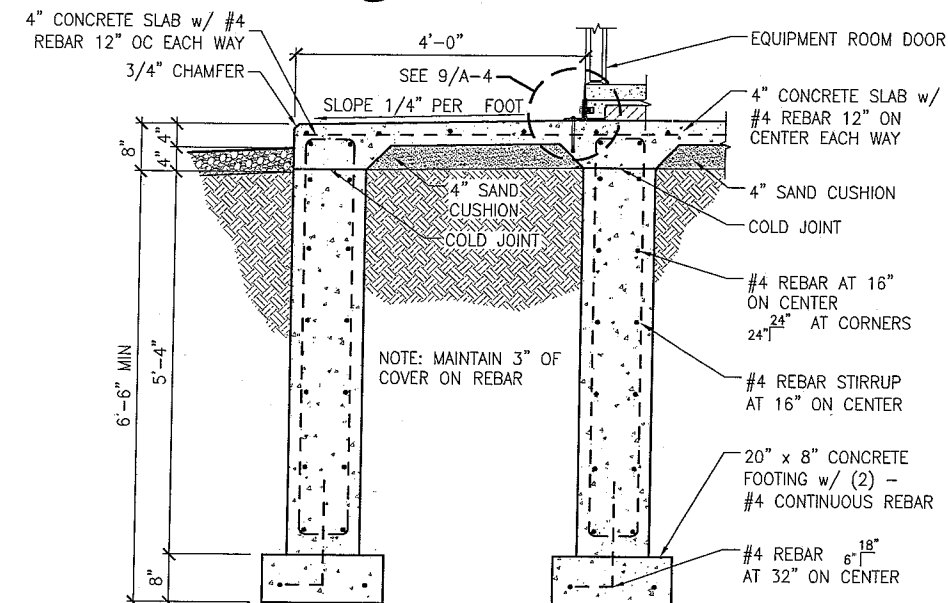
11 GENERATOR END
SCALE: 3/4" = 1'-0"



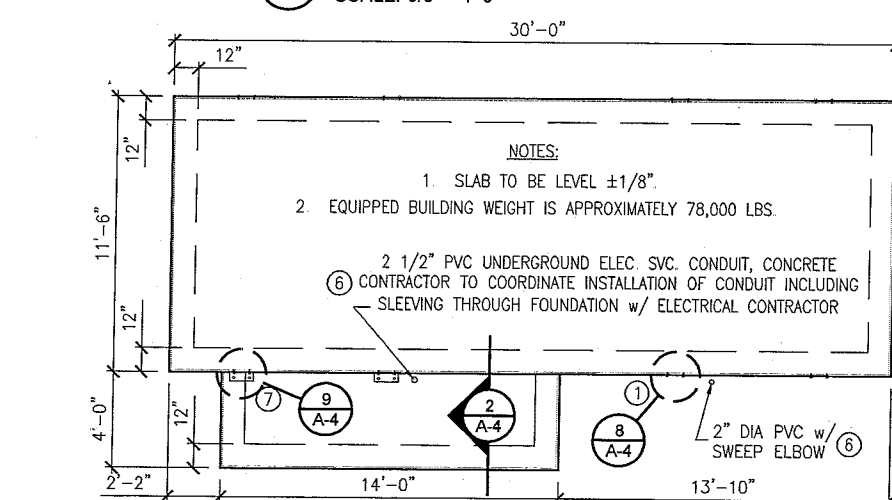
9 STOOP ANCHORING SECTION
SCALE: 1" = 1'-0"



10 ROOF SHIELD PLAN
SCALE: 1/8" = 1'-0"



2 FOUNDATION SECTION
SCALE: 3/8" = 1'-0"



1 FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



PREFABRICATED BUILDING BY:
Fibrebond Corporation
1300 Davenport Drive
Minden, LA 71055
800-824-2614
ATTN: SCOTT PARTIN

FIELD-APPLIED ITEMS		CONTRACTOR-FURNISHED ITEMS	
1	ANCHORING PLATES	6	PVC CONDUIT & FITTINGS
2	EXTERIOR LIGHT FIXTURE	7	FABRICATED ANCHORING ANGLES
3	GENERATOR MUFFLER	8	GALV STL ROOF SHIELD
4	BUSS BAR		
5	HOFFMAN ENCLOSURE (FROM WAREHOUSE)		

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and that I am a duly registered Architect under the laws of the State of Minnesota.

DESIGN 1
OF EDINA, LTD.
ROBERT J. DAVIS, AIA
ARCHITECT
9973 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55344
(952) 933-9259 FAX 933-9262

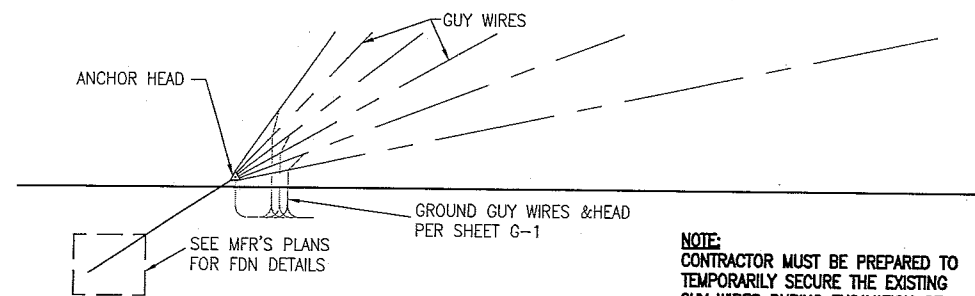
VERIZON WIRELESS
9955 58th Avenue North, Suite # 120
Plymouth, MN 55442

PROJECT: 2004019518
ND04 ROUGH RIDER
3204 EAST RIVER ROAD
MEDORA, ND 58645

SHEET CONTENTS:
FOUNDATION PLAN & DETAILS
FLOOR PLAN
ELEVATIONS
ANCHORING DETAILS
ROOF SHIELD DETAILS

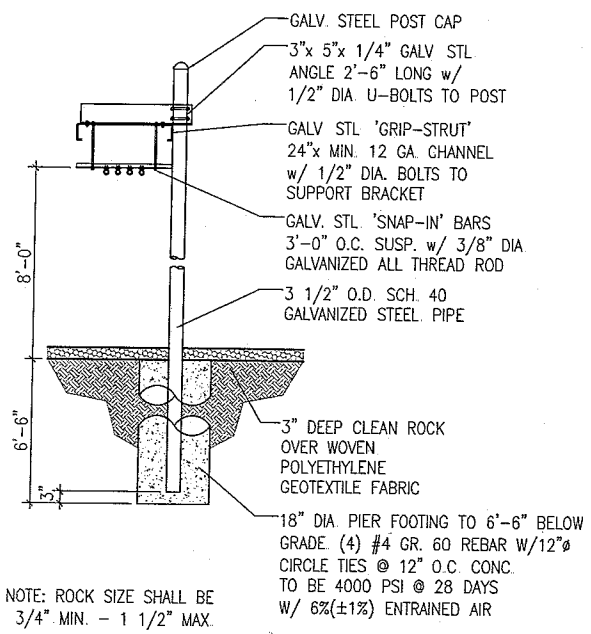
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CHECKED BY: TRB
REV A: 11-03-04
REV B: 01-03-05
REV C: 03-09-05

A-4

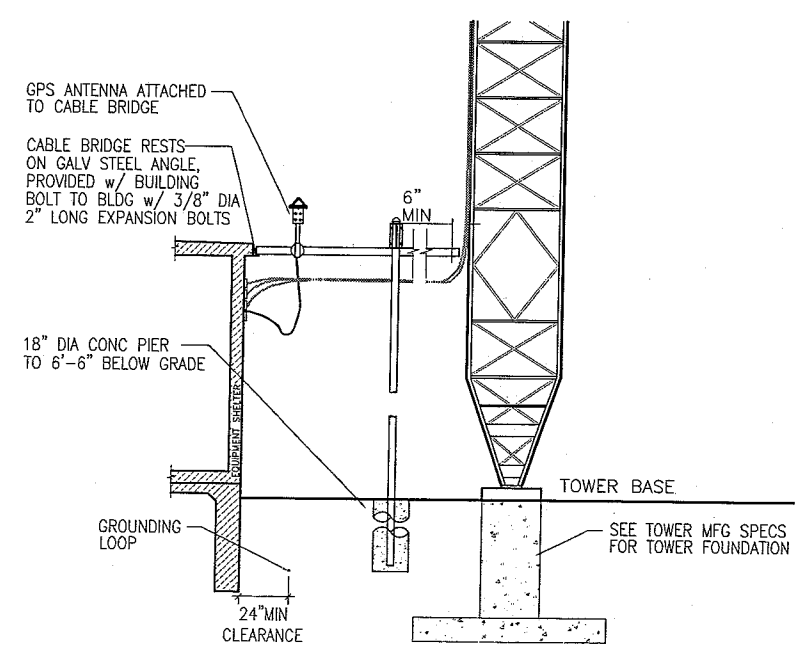


4 GUY WIRE ANCHOR ELEVATION
SCALE: 1/4" = 1'-0"

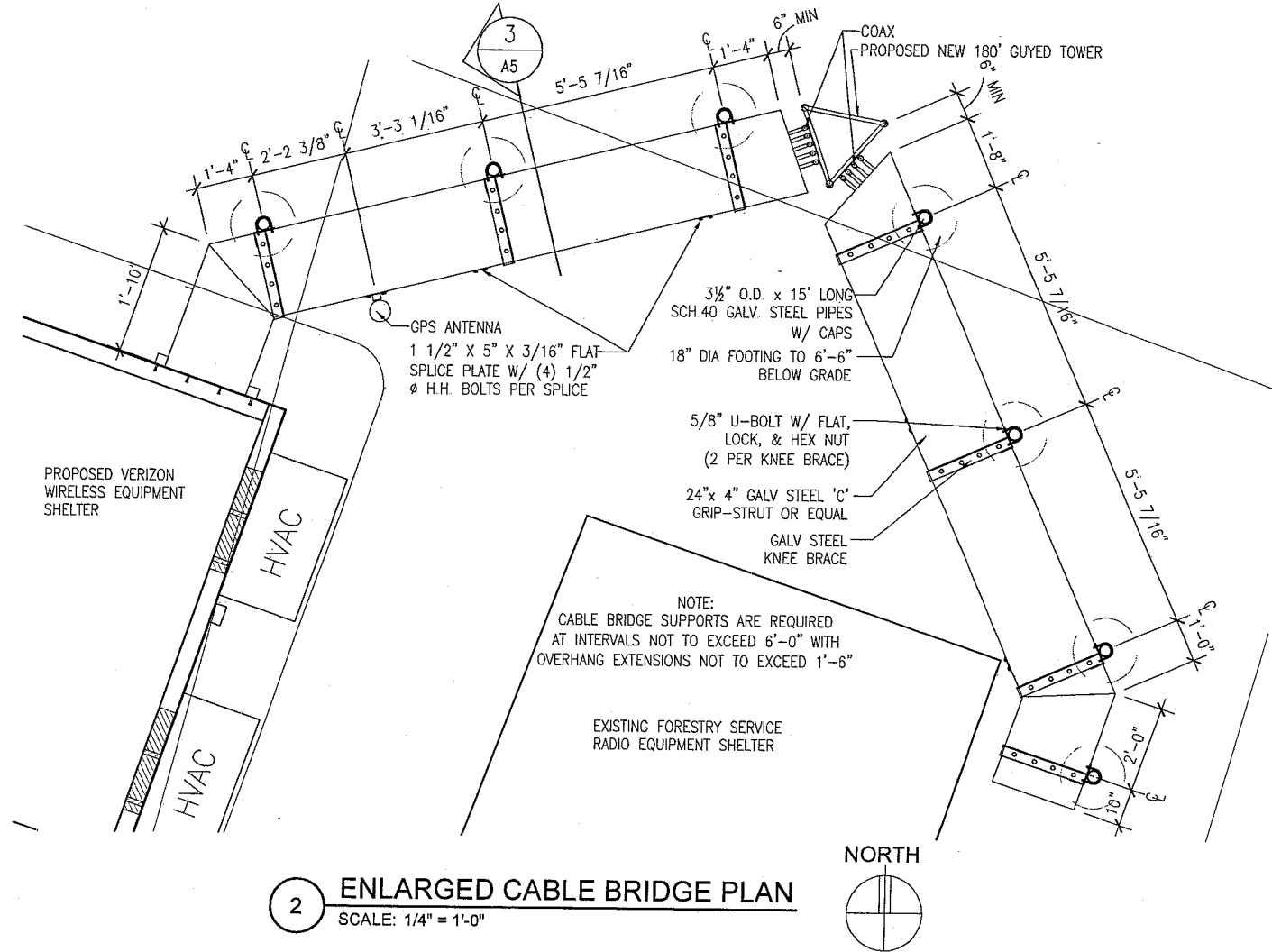
NOTE:
CONTRACTOR MUST BE PREPARED TO
TEMPORARILY SECURE THE EXISTING
GUY WIRES DURING EXCAVATION OF
THE NEW GUY ANCHORS.



3 CABLE BRIDGE SECTION
SCALE: 1/4" = 1'-0"



1 CABLE BRIDGE ELEVATION
SCALE: 1/8" = 1'-0"



2 ENLARGED CABLE BRIDGE PLAN
SCALE: 1/4" = 1'-0"

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and that I am a duly registered professional engineer in the State of North Dakota.
ROBERT J. DAVIS, Reg. No. 1228

DESIGN
OF EDNA LTD.
9873 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55344
(952) 903-9295 FAX 903-9292
ROBERT J. DAVIS, AIA
ARCHITECT

9855 59th Avenue North
Suite # 120
Plymouth, MN 55442
VERIZON WIRELESS

PROJECT: 2004019518
ND04
ROUGH RIDER
3204 EAST RIVER ROAD
MEDORA, ND 58645

SHEET CONTENTS:
DETAILS
DRAWN BY: RAS
DATE: 11-03-04
CHECKED BY: TRB
REV A 11-03-04
REV B 01-03-05
REV C 03-09-05

A-5

OUTLINE SPECIFICATIONS

GENERAL CONDITIONS

00 0001 PERMITS

Construction Permit shall be acquired by, or in the name of, Verizon Wireless, to be hereinafter referred to as the OWNER. Other permits shall be acquired by the Contractor.

00 0002 SURVEY FEES

Survey shall be furnished by the Architect. Layout Staking shall be coordinated with the Surveyor per "Request For Quote", (RFQ).

01 0010 INSURANCE & BONDS

Contractor is to furnish Insurance certificates for themself and subcontractors. Contractor will provide any required Bonding. Contractor agrees to warranty the project for (1) one year after completion.

01 0400 SUPERVISION & COORDINATION

Contractor shall provide supervision throughout the Project, coordinating the work of the Subcontractors, and delivery & installation of Owner-furnished items. Contractor's responsibilities include arranging & conducting of Underground Utilities Locates. Contractor shall comply with municipal, county, state and/or federal codes, including OSHA.

01 0600 TESTING

Contractor is responsible for providing Architect with sufficient notice to arrange for Test Samples (i.e.: Concrete Cylinders), and for Special Inspections.

01 2000 MEETINGS

Contractor shall make themself aware of, and attend, meetings with the Owner and/or Architect. Contractor is to attend a Pre-Construction Meeting of all parties involved, prior to the start of construction.

01 5100 TEMPORARY UTILITIES

Contractor shall maintain the job site in a clean and orderly fashion, providing temporary sanitary facilities, waste disposal, and security (fence area or trailer module).

01 5300 EQUIPMENT RENTAL

Contractor shall furnish equipment necessary to expedite Work.

01 5900 FIELD OFFICES & SHEDS

Contractor shall provide security (fence area or trailer module) for tools and materials that remain overnight on site.

01 7000 CLEAN UP & CLOSE OUT

Contractor shall clean up the Site to the satisfaction of Owner. Contractor shall complete the items listed on the Owner's Punch List, and shall sign and return the List to the Owner. Contractor shall maintain a set of drawings during the job, on which changes shall be noted in red ink. Redlined drawings (as-builts) are to be given to the Architect at Job completion.

01 8000 TRUCKS & MILEAGE

Contractor shall provide transportation for their own personnel.

01 8300 TRAVEL TIME & PER DIEM

Contractor shall provide room and board for their own personnel, and reasonable time for traveling to & from job site.

01 9200 TAXES

Contractor shall pay sales and/or use tax on materials and taxable services.

SITWORK

02 1000 SITE PREPARATION & DEMOLITION

Contractor is to mobilize within 7 calendar days of the Owner issuing a 'START' document. Contractor will immediately report to Architect if any environmental considerations arise. Site shall be scraped to a depth of 3" minimum to remove vegetable matter, and scrapings shall be stockpiled on site. Contractor is to temporarily secure the existing guy wires during excavation of new guy anchors. Contractor shall disassemble and remove the existing tower and guy wires only after the new tower has been erected and the existing equipment on the existing tower has been relocated to the new tower. Excess material to be disposed of in accordance with RFQ.

02 1100 ROAD IMPROVEMENT & CONSTRUCTION

Contractor shall furnish materials for, and repair and improve the existing access drive to a twelve foot (12') wide X (8500') long gravel roadway from the road access to the work area, for truck and crane access to site. Contractor shall provide turn-outs as indicated in the road construction documents included in this package. Contractor shall construct the road in accordance with the access road construction documents included in this package. Contractor shall furnish & install culverts as necessary to prevent ponding or washing-out from normal surface runoff as noted on the road construction documents included in this package. Contractor shall obtain city, county, state and/or federal approvals for road approach and culvert work within or adjacent to right-of ways. Road shall be graded smooth, and edges dressed, at job completion.

02 2000 EARTHWORK & EXCAVATION

Excavation material shall be used for surface grading as necessary; excess to be stockpiled on site. Excess material to be disposed of in accordance with RFQ.

02 5000 PAVING & SURFACING

Gravel Paving shall be as described in 02 0800.

02 7800 POWER TO SITE

Contractor shall coordinate the electrical service to the building with the Utility Provider. Conduits shall include pull strings. Underground conduits shall be 2-1/2" Schedule 40 PVC. (schedule 80 PVC under roads and drives) Cable to be 3/0 THWN CU. Trenches shall be backfilled in a timely fashion, using a compactor, and including two (2) detectable ribbons; one each at 3" and 15" above conduit. Service shall be 200 amp, single phase, 120/240 volt. Service type shall be "General Time-Of-Day" if available, and meter base shall be approved by utility provider.

02 8000 SITE IMPROVEMENTS

Perimeter of prefab building and concrete stoop shall receive polyethylene geotechnical fabric, 200 mesh woven, topped with 3" deep 3/4" to 1 1/2" clean rock (no fines), raked smooth at a minimum distance of 2'-0" from equipment shelter.

02 8001 FENCING

N/A.

02 8500 IRRIGATION SYSTEMS

N/A.

02 9000 LANDSCAPING

Contractor shall protect existing landscape elements that are not in the Scope of Work. Reasonable precautions shall be taken to assure the health of existing trees and shrubbery. If conflicts arise regarding the location of root systems, branch lines, etc., the Architect must be contacted prior to performing Work that may cause damage. Damage resulting from disregard of this Article shall be compensated by the Responsible Party and at a cost to be determined by the Property Owner, Architect, and Owner. Contractor shall furnish and install new trees, shrubs, and sod, watering per 02 8500.

CONCRETE

03 1000 CONCRETE FORMWORK

Concrete forms shall be dimension lumber, modular, or steel; if soil conditions permit.

03 6000 GROUT

Contractor shall grout baseplates according to Tower Manufacturer drawings.

03 8000 TOWER FOUNDATION

Contractor shall arrange for delivery of anchors, and shall furnish and install materials per Tower Manufacturer Plans. Tower foundation concrete and reinforcing to be per tower manufacturer's specification, or 6% ±1% air entrained, 4,000 PSI @ 28 days, with Grade 60 (ASTM 615) reinforcing steel, whichever is greater. Contractor shall comply with the Owner's Standard CONSTRUCTION SPECIFICATIONS MINIMUM CONCRETE STANDARDS. For deadman guy anchors, Contractor is to temporarily secure the existing guy wires during excavation of new guy anchors. For deadman guy anchors, Contractor shall coat anchor shafts and any other metal to be buried with non-conductive coating (Bitumastic 50 or equal).

03 8001 CATHODIC PROTECTION

Contractor shall install Owner-furnished Cathodic Protection Devices per the Manufacturer's instructions.

03 8050 TRANSPORT AND ERECT TOWER/ANTENNA MOUNTS

Contractor shall schedule delivery of Owner-furnished Tower, and provide cranes for unloading and erecting. Contractor to furnish and install antenna mount(s) and handholes. Contractor shall ensure the existence of a 3/8" cable safety climb (DBI/Sala or equal) on the Tower. Contractor shall provide for operation of FAA required lighting per RFQ, and temporary security fence at base of Tower.

03 9000 SHELTER FOUNDATION

Contractor shall furnish & install materials for Shelter foundation. Concrete shall be 6% ±1% air entrained, and 4,000 psi at 28 days. All reinforcing steel is be Grade 60 (ASTM 615). Anchor bolts are furnished by Contractor. Contractor shall comply with the Owner's Standard CONSTRUCTION SPECIFICATIONS MINIMUM CONCRETE STANDARDS.

03 9050 TRANSPORT AND SET SHELTER

Contractor shall provide crane(s) and/or truck for setting shelter per RFQ. Contractor shall install items shipped loose within shelter, including but not limited to: generator connector, exterior light and sensor, vent hoods, and buss bars.

MASONRY

04 0000 MASONRY

Contractor shall furnish and install concrete masonry structures as shown on plans.

METALS

05 0000 METALS

Contractor will furnish and install structural and fabricated steel items not specifically furnished by Owner, and install Owner-furnished items. Structural steel shall be fabricated and erected per AISC specifications. Welding shall conform to AWS standards. Field welding shall be as shown on Shop Drawings, performed by AWS Certified Welders, and inspected as prescribed by the Structural Engineer. Steel shall be ASTM A36, and 3/4" field bolts shall be A325. Temporary erecting bolts, clip hangers, and bracing shall be furnished by Contractor. Fabrications shall be shop welded if possible, and galvanized before delivery to site. Contractor shall ensure the existence of a 3/8" cable safety climb system (DBI/SALA or equal) on tower.

WOOD & PLASTICS

06 1000 ROUGH CARPENTRY

N/A.

06 2000 FINISH CARPENTRY

N/A.

THERMAL & MOISTURE

07 2000 INSULATION

N/A.

07 2500 FIREPROOFING

N/A.

07 3000 SHINGLES AND ROOFING TILES

N/A.

07 5000 MEMBRANE ROOFING

N/A.

07 6000 FLASHING AND SHEET METAL

N/A.

DOORS AND HARDWARE

08 0000 DOORS AND HARDWARE

Doors are furnished and installed by Prefab Manufacturer with 'Construction' key core.

FINISHES

09 2600 DRYWALL

N/A.

09 5700 FLOOR COVERING

N/A.

09 9000 PAINTING

Contractor shall ensure that Tower is marked if so described in the RFQ.

SPECIAL CONSTRUCTION

13 1250 WAVE GUIDE, (Coaxial Cables)

LDF5 = 7/8" nominal, 1.09 in. actual dia.; 10" min. bending radius; 33 lbs/ft
EW90 = Elliptical, 1.32 in. X .80 in. actual dimensions; 6" & 13" min. bending radius in two different planes; 32 lbs/ft

13 1260 CABLE BRIDGE & ROOF SHIELD

Roof shield to be constructed of 1 1/4" 19W4 x 1/8" steel grates on continuous steel tubes supported at 6'0" on center maximum. Steel to be hot dipped galvanized.

Cable bridge to be 24 inch wide, 12 gauge, 'grip strut' supported 10' on center maximum by 3 1/2" steel pipe and 3" x 5" x 1/4" x 30" long angle. Steel to be hot dipped galvanized.

13 1400 ANTENNA INSTALL

Contractor shall coordinate installation of Owner's antennas and feed lines during erecting. Contractor shall sweep coax lines for continuity before leaving site.

MECHANICAL

15 4000 PLUMBING

N/A.

15 5000 HVAC

Shelter is factory-equipped with two thru-wall package units of 5-ton and 10 KW capacity.

ELECTRIC

16 5000 LIGHTING AND ELECTRICAL

Contractor shall perform work as described on the Electrical Plans. Contractor shall provide labor and materials as necessary to complete the installation of any tower lighting system described in the RFQ. Contractor shall provide all other materials necessary to complete the work shown on plans. Alternates shall be approved by Architect.

16 6000 GROUNDING

Contractor shall make themself familiar with and follow the current GROUNDING STANDARDS of VERIZON WIRELESS. Contractor shall perform work as shown on Grounding Plans. Any site-specific grounding issues not covered by the GROUNDING STANDARD are to be addressed by the Contractor to the Owner.

OWNER-FURNISHED EQUIPMENT & FEES

PREFABRICATED EQUIPMENT SHELTER
GUYED TOWER
COAXIAL CABLES, CONNECTORS, BOOTS, RELATED HARDWARE, ANTENNAS AND DOWNTILT BRACKETS
CABLE BRIDGE
BUILDING PERMIT FEE
MATERIALS TESTING FEE
SPECIAL INSPECTIONS FEE

CONTRACTOR-FURNISHED EQUIPMENT

WAVE GUIDE SUPPORTS, INCLUDING LINE HANGER 'SNAP-IN' CHANNELS,
GALVANIZED STEEL GRATE ROOF SHIELD IF PER RFQ.
POWER DISTRIBUTION DEVICES.
POWER TO SITE.

SCOPE OF WORK:

CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, TOOLS, TRANSPORTATION, SUPERVISION, ETC. TO FULLY EXECUTE WORK. WORK REQUIREMENTS ARE DETAILED ON THE DRAWINGS AND SPECIFICATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING ITEMS:

SITE PREPARATION
SITE WORK AND ROAD CONSTRUCTION
SHELTER AND TOWER FOUNDATIONS
ERECT TOWER AND SET SHELTER
CABLE BRIDGE & ROOF SHIELD
INSTALL ANTENNAS & CABLES
ELECTRICAL
DEMOLITION & REMOVAL OF EXISTING TOWER
SITE GROUNDING
GRAVEL SURFACING

Contractor to compare drawings against Owner's "Request for Quote", (RFQ). If discrepancies arise, Contractor should verify with Owner that the RFQ supercedes the drawings.

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly Licensed Professional Engineer in the State of NORTH DAKOTA.
ROBERT J. DAVIS, Reg. No. 1228

Date:

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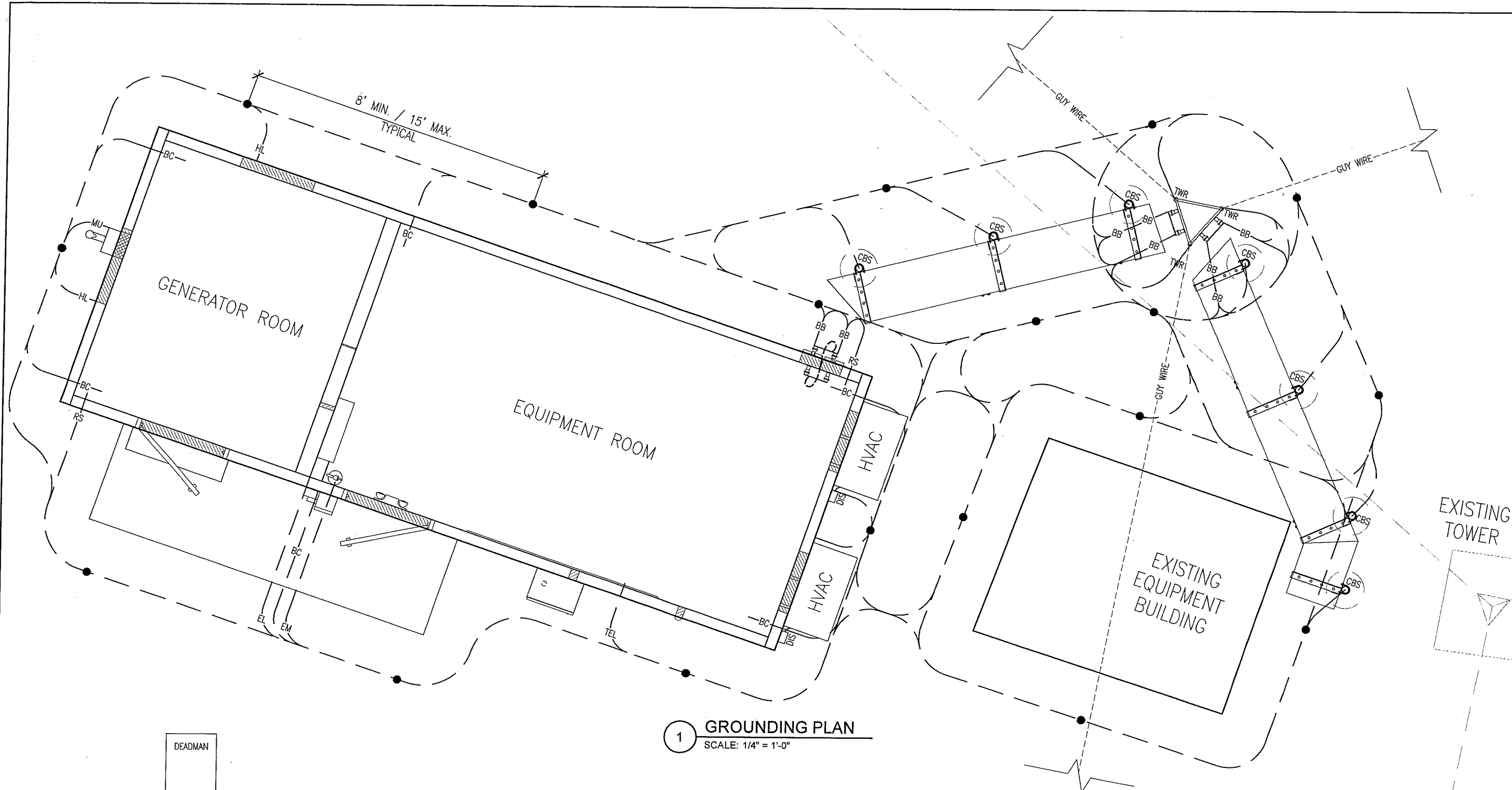
9955 59th Avenue North
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Plymouth, MN 55442
VERIZON WIRELESS

PROJECT: 2004019518
ND04
ROUGH RIDER
3204 EAST RIVER ROAD
MEDORA, ND 58645

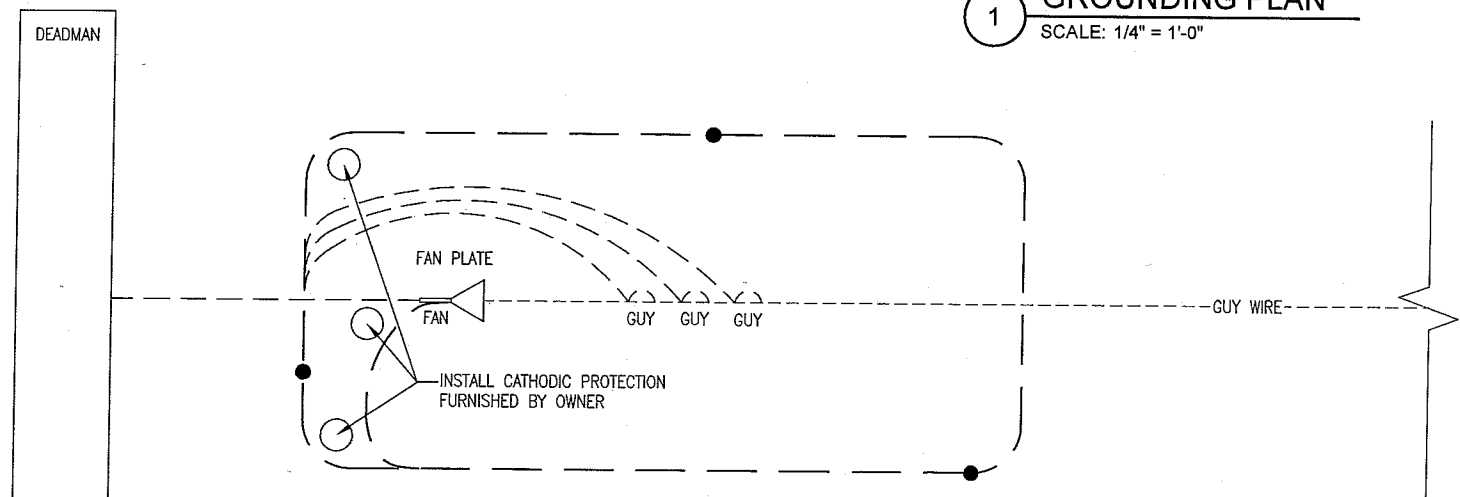
SHEET CONTENTS:
OUTLINE SPECIFICATIONS

DRAWN BY:	RAS
DATE:	11-3-04
CHECKED BY:	TRB
REV A	11-03-04
REV B	01-03-05
REV C	03-09-05

A-6



1 GROUNDING PLAN
SCALE: 1/4" = 1'-0"



1 GUY ANCHOR GROUNDING PLAN
SCALE: 1/4" = 1'-0"

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly Licensed Professional Engineer in the State of North Dakota. ROBERT J. DAVIS, Reg. No. 1229

Date:

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OF ENGINEERING

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**VERIZON
WIRELESS**

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ND04
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SHEET CONTENTS:

GROUNDING PLAN	
GROUNDING NOTES	
DRAWN BY:	RAS
DATE:	11-03-04
CHECKED BY:	TRB
REV A	11-03-04
REV B	01-03-04
REV C	03-09-05

General Notes:

An external buried ground ring shall be established around the equipment shelter foundation. Where the tower base is 20'-0" or less from the equipment shelter, the ground ring from the shelter shall extend around the tower base in a semicircle. If the tower base is over 20'-0" from the equipment shelter, a separate ground ring shall be established around the tower foundation. The two rings shall be bonded with two parallel conductors separated (horizontally?) By at least 6 feet. Connections between the two rings shall be bi-directional.

All sub-grade connections shall be by exothermic weld, by brazed weld, or by gas-tight listed compression pre-filled with anti-oxidant compound. Sub-grade connections shall not be coated with cold galvanizing compound.

The ground ring shall be #2 solid bare tin-clad copper conductor at least 24" below grade. Bend radii of 12" minimum shall be maintained.

Ground rods shall be galvanized steel, 8'-0" by 5/8"Ø, spaced 8'-0" to 15'-0" apart. Rod tops shall be driven to a depth of 30 inches below grade. Rods and ring shall be kept 24 inches from foundations

Above-grade connections shall be by lugs w/ two-hole tongues unless noted otherwise, joined to solid conductors by welding or self-threading (Electric Motion Company, part number EM 2522DH.625) to solid conductors, or by compression to stranded conductors. Lugs to galvanized or coated surfaces shall have the coating removed prior to making the bolted connection. Bolts shall be stainless steel with flat washers on each side of the connection and a lock washer beneath the fastening nut. Lug tongues shall be coated with anti-oxidant compound, and excess compound wiped clean after bolting. The connection shall then be coated with cold galvanizing compound, or with color-matching paint.

Ground bars exposed to weather shall be tin-clad copper (MTS Wireless Components GB-0414T-IS or equal), and shall be clean of any oxidation prior to lug bolting.

All weld connections to galvanized items shall have zinc removed prior to welding. After welding, the joint shall be coated with cold galvanizing compound.

Ground Bar Conductors

Ground bars are isolated electrically from towers and equipment shelters by their standoff mounts. Conductor from each ground bar to the ground ring shall be a single 500 MCM, or by two 4/0, or by four 2/0 stranded conductors. Each 500 MCM conductor shall connect to the ground ring with two welds, or with two crimps, with a solid copper tin-clad #2 lead to form a bidirectional connection. For 4/0 or 2/0 conductors, only one connection to the external ground ring is required for each conductor. These conductors shall be routed to ground bars as follows:

- * The Main External Ground Bar, mounted to the equipment shelter beneath the transmission line port entry. Note: Transmission line grounds and 2/0 connection from the interior Master Ground Bar also attach to the Main External Ground Bar.
- * The Transmission Line Ground Bar mounted at the base of the tower to which the transmission line grounds are attached.

#2 Solid Bare tin-clad copper Whip Conductors

"Whip" leads shall connect the buried external ground ring to the following items:

- Monopole Towers:
- * Three whips to the monopole base plate, at least 90' from each other.

Self Support Towers:

- * Two whips to each tower leg base plate. If a tower leg is a solid member, welding to it may be allowed; consult tower manufacturer before welding. NEVER weld to a hollow-member tower leg.

- Guyed Towers:
- * Two whips to the tower base, either to base plate or to tabs provided by tower manufacturer.
 - * Separate ground rings are required within the fence enclosure of each guy anchor, each with at least three ground rods.
 - * #2 tin-clad stranded copper conductors shall extend up and be clamped (bronze clamshell or equal) to any two guy wires, and welded to the guy anchor 'hand' plate. Stranded copper conductors are used for grounding of guy wires and guy anchor plates to prevent breakage of the conductor resulting from movement of the guy wires. NEVER weld conductors to the guy wires.

- Fences:
- Metallic fence within 25 feet of the tower, or within 6 feet from the equipment shelter, shall have whips as follows:
- * Each corner post.
 - * Each gate post.
 - * Any line post over 20'-0" from a grounded post
 - * Each gate leaf to its respective gatepost using flexible braided conductor (3/4" copper, tin-clad) w/ lug ends).
 - * Fences around guy anchors shall be grounded in similar fashion.

- Equipment Shelter and Other General Requirements:
- * Each corner of the equipment shelter, to the down-lead from the interior halo ground. Generator-equipped shelters have 6 such connections. These connections shall be within the shelter, and shall be compression-type. NEVER weld inside the shelter.
 - * The telco board within the shelter.
 - * Each vertical support pipe of the exterior cable bridge. The end of the bridge shall be kept at least 6" from the tower structure.
 - * Opposite corners of the roof shield over the equipment shelter.
 - * Each shield over HVAC units if separate (may be 'jumped' to main roof shield).
 - * Each HVAC package unit.
 - * Each HVAC unit disconnect (may be 'jumped' to the HVAC unit).
 - * Commercial electric meter box.
 - * Generator receptacle, if shelter is furnished with no generator.
 - * Steel building skid, if shelter is Dupont-type.
 - * AC power service ground (electrician's ground - #2 to #6 connection).
 - * Each air intake or exhaust fan vent louver.
 - * Each generator vent hood or louver.
 - * Generator exhaust stack, external.
 - * Opposite corners of generator support frame, if separate from shelter.
 - * Generator fuel tank, if separate from generator unit.
 - * Each rain gutter down spout.
 - * Nearby roof flashings
 - * Telco MPOP (Main Point of Presence), if external to equipment shelter.
 - * Within cable vaults, one each to the ladder and to the manhole rim.

Note: The door frame and transmission line cable port entry plate are connected to the interior ground halo, and need no separate connection to the external ground ring

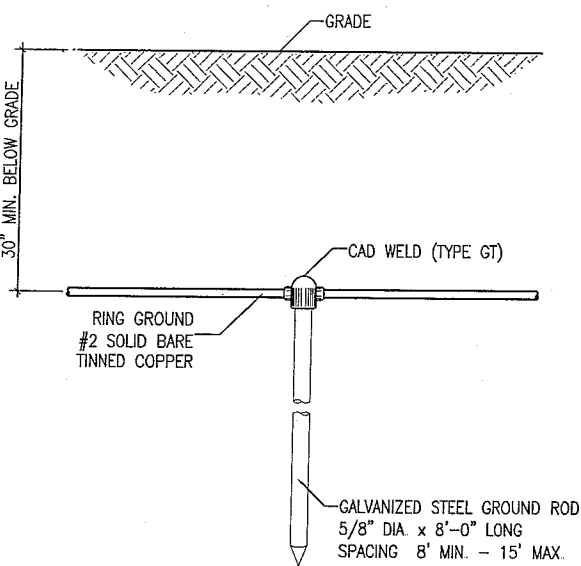
Megger Test

Must be below 3 ohms using the resistance profile method.

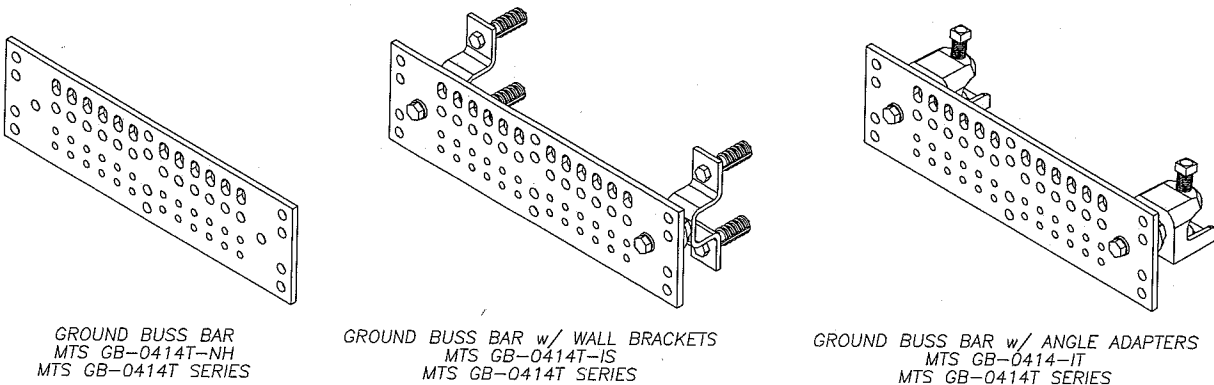
These are generally established guidelines to be used as a basic checklist and for contractor bidding purposes. Issues relating to non-standard sites should be addressed on a site-specific basis. Please refer to established Client practices for specifics.

SYMBOL AND NOTE LEGEND

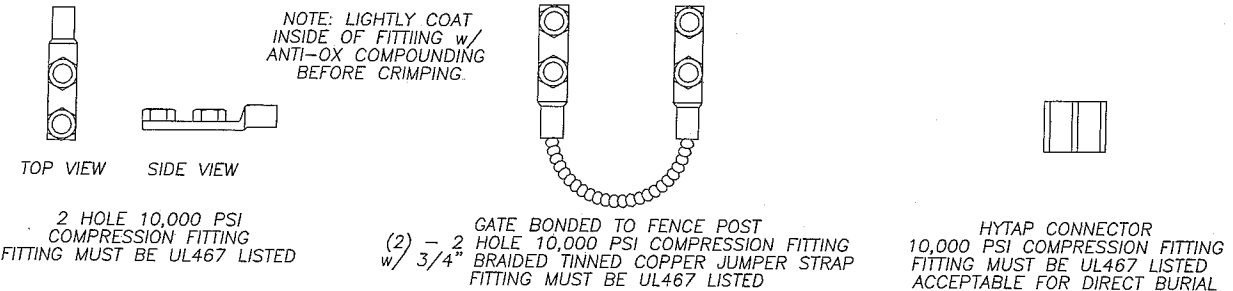
- (MGB)-MAIN GROUND BUSS (INTERNAL) TO (BGB)-MAIN GROUND BUSS (EXTERNAL) USING ONE 2/0 CONDUCTOR
- BB— (2) #2 SOLID BARE TINNED COPPER FROM BUSS BAR TO GROUND RING
- — #2 SOLID BARE TINNED COPPER
- ⊖ 3/4" BRAIDED STRAP JUMPER FROM GATE LEAF TO FENCE POST
- GROUND ROD
- FP FENCE POST
- TWR TOWER BASE
- BC BUILDING CORNER
- CBS CABLE BRIDGE SUPPORT PIPE
- RS ROOF SHIELD
- AC HVAC UNIT
- DIS JUMPER FROM HVAC UNIT TO HVAC DISCONNECT
- EM COMMERCIAL ELECTRICAL METER
- EL ELECTRICAL SERVICE GROUND
- HL HOOD OR LOUVER
- MU GENERATOR MUFFLER
- TEL TELCO BOARD
- BO BOLLARD
- VA LADDER & MANHOLE IN A VAULT
- FAN GUY ANCHOR PLATE
- GUY GUY WIRE



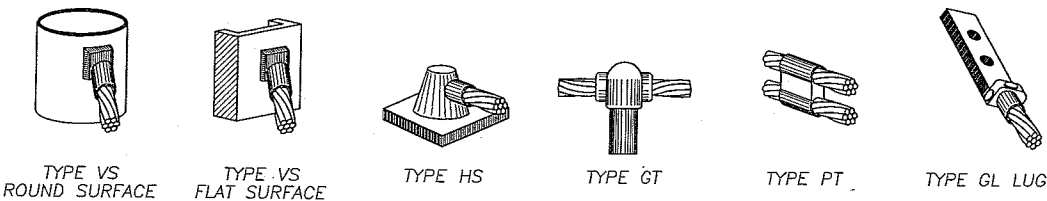
1 GROUND RING & ROD DETAIL
SCALE: NONE



2 GROUND BUSS BAR DETAILS
SCALE: NONE



3 COMPRESSION CONNECTOR DETAILS
SCALE: NONE



4 EXOTHERMIC WELD DETAILS
SCALE: NONE

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly Licensed Professional Engineer in the State of North Dakota. ROBERT J. DAVIS, Reg. No. 1228

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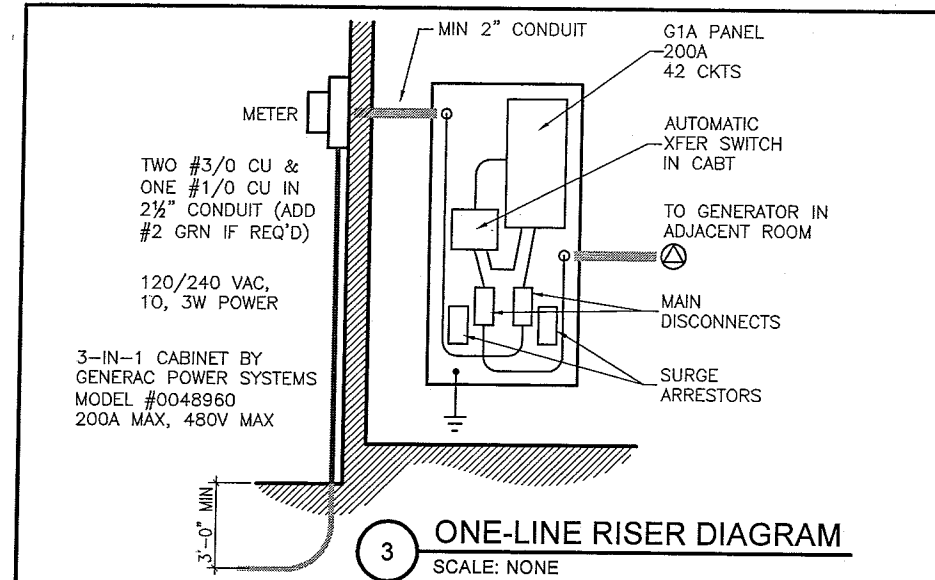
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WIRELESS

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ROUGH RIDER
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SHEET CONTENTS:
GROUND RING AND ROD DTLS
GROUND BUSS BAR DETAILS
CONNECTOR DETAILS
EXOTHERMIC WELD DETAILS

DRAWN BY: RAS
DATE: 11-03-04
CHECKED BY: TRB
REV A 11-03-04
REV B 01-03-04
REV C 03-09-05

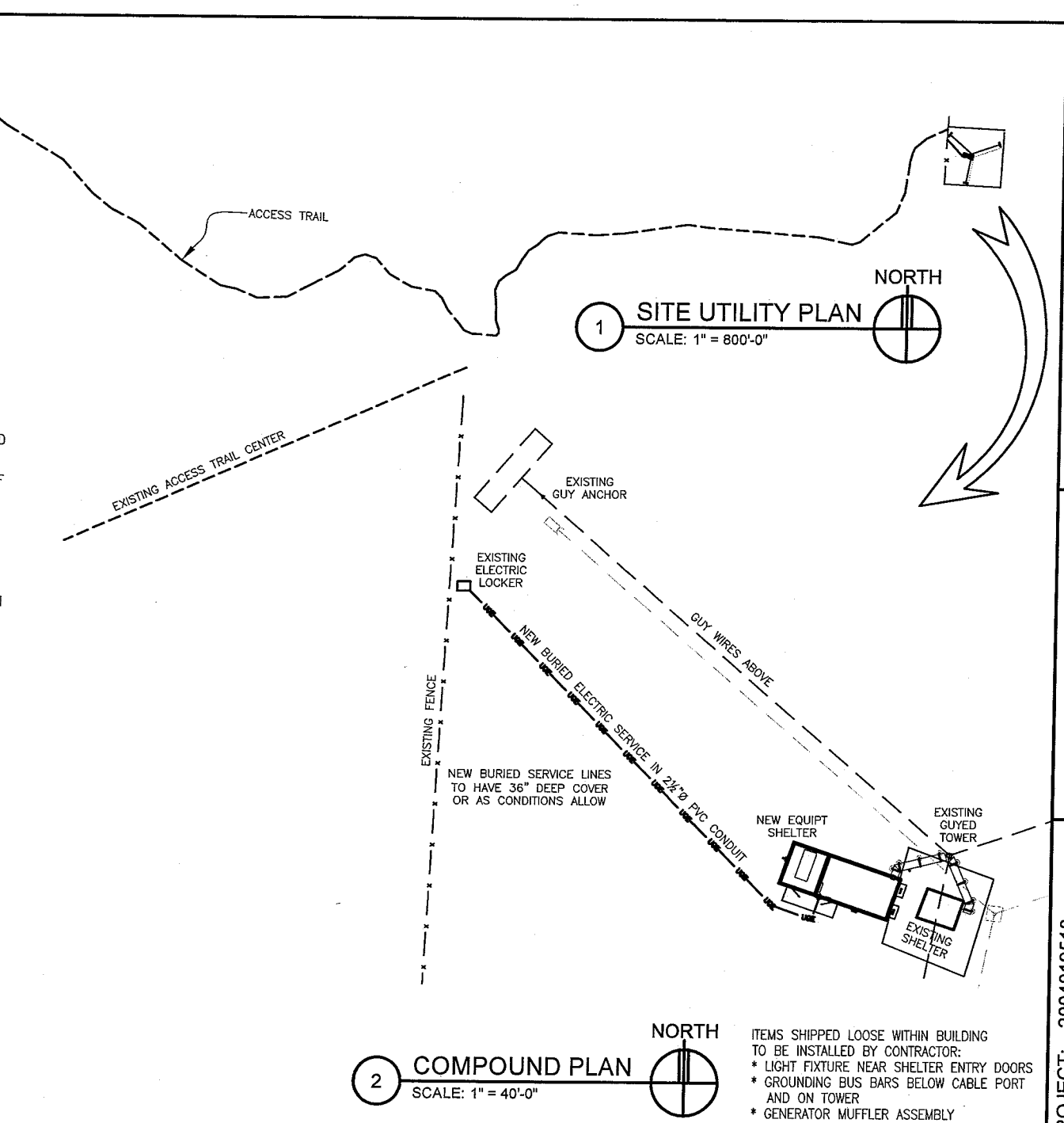
G-2



PANEL G1A : 120/240V, SINGLE PHASE, 200A MAIN BREAKER, 30 CIRCUIT, SURFACE MOUNT									
CIRCUIT DESCRIPTION	AMPS	CKT	A	B	A	B	CKT	AMPS	CIRCUIT DESCRIPTION
HVAC UNIT 1	60	1		5696		5696	2	60	HVAC UNIT 2
	60	3	5696		5696		4	60	
SD, VENT TIMER-FAN	15	5		132			6		SPACE
BATT CHG-BLK HTR	20	7	180		892		8	20	LIGHTS
RECEPTACLES	20	9		1260		150	10	15	VENTS
RECTIFIER	30	11	1200				12		
	30	13		1200			14		
RECTIFIER	30	15	1200				16		
	30	17		1200			18		
RECTIFIER	30	19	1200				20		
	30	21		1200			22		
RECTIFIER	30	23	1200				24		
	30	25		1200			26		
RECTIFIER	30	27	1200				28		
	30	29		1200			30		
RECTIFIER	30	31	1200				32		
	30	33		1200			34		
SPACE		35					36		
		37					38		
SURGE ARRESTOR	60	39					40		
	60	41					42		
SUBTOTAL CONTINUOUS			7380	8360	892	150	WATTS		
SUBTOTAL NON-CONTINUOUS			5696	5696	5696	5696	WATTS		
CONNECTED LOAD ANALYSIS (REQUIRED BY POWER COMPANY)									
DERATED SERVICE CALCULATION (PLUS 25% OF CONTINUOUS LOADS - 3 HOURS OR MORE - NEC SERVICE CALCULATION)									
TOTAL PHASE A LOAD 9,664				TOTAL DEMAND LOAD 43,762					
TOTAL PHASE B LOAD 9,902				TOTAL DEMAND AMPS 182.3					
TOTAL CONNECTED LOAD 19,566									
TOTAL CONNECTED AMPS 864.9									



- GENERAL NOTES:**
- SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
 - CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATION TESTS, AND EXAMINE WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
 - HEIGHTS SHALL BE VERIFIED WITH OWNER PRIOR TO INSTALLATION.
 - THESE PLANS ARE DIAGRAMMATIC ONLY. FOLLOW AS CLOSELY AS POSSIBLE.
 - EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANELBOARD, PULLBOX, J-BOX, SWITCH BOX, ETC., IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.).
 - CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
 - ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORY AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NBFU.
 - CONTRACTOR SHALL CARRY OUT HIS WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
 - CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS.
 - COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
 - ALL CONDUIT ONLY (C.O.) SHALL HAVE A PULL WIRE OR ROPE.
 - PROVIDE CONSTRUCTION MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
 - ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO OWNER AT JOB COMPLETION.
 - USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR.
 - ALL CONDUCTORS SHALL BE COPPER.
 - ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
 - THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES AND DRAWINGS.
 - RECEPTACLES SHALL BE 20 AMPERE, 125 VOLT A.C., WHITE AS REQUIRED BY THE ARCHITECT OR APPROVED EQUAL.
 - WALL SWITCHES SHALL BE SINGLE-POLE, HUBBELL #1201 OR EQUIVALENT, WHITE AS REQUIRED BY THE ARCHITECT.
 - PLASTIC PLATES FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS, SHALL HAVE ENGRAVED LETTERING WHERE INDICATED ON THE DRAWINGS. WEATHERPROOF RECEPTACLES SHALL HAVE RACO #800, 1/2" RAISED WORK COVERS.
 - WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM, NO BX OR ROMEX CABLE IS PERMITTED UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
 - GROUND RODS SHALL BE STEEL CLAD IN COPPER, TIN OR ZINC, 5/8" ROUND AND 10' LONG, COPPERWELD OR APPROVED EQUAL.
 - METER SOCKET AMPERES, VOLTAGE, NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS. MANUFACTURED BY SQUARE D COMPANY OR APPROVED EQUAL. IF HOST FACILITY REQUIRES THE NEW SERVICE TO BE SUB-METERED FROM THE EXISTING SERVICE, SUB-METER SHALL BE OF THE 10x OR 16x TYPE.
 - ALL MATERIALS SHALL BE U.L. LISTED.
 - CONDUIT:
 - SERVICE CONDUITS SHALL BE GRAY SCH.40 PVC BURIED MIN. 36", EXCEPT THAT SCH.80 SHALL BE USED UNDER ROADWAYS AND IN LOCATIONS SUBJECT TO CASUAL IMPACTS. BENDS SHALL BE MADE USING "WIDE SWEEP" (12" MIN. RADIUS) ELBOW FITTINGS. ANY CODE-REQUIRED RIGID STEEL CONDUIT SHALL BE U.L. LABEL, GALVANIZED INSIDE & OUTSIDE. CONDUIT SHALL EXTEND MIN. 24" BELOW GRADE, WITH "SWEEP" ELBOWS (12" R.M.I.) ENDING IN PVC TRANSITION FITTINGS. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAP-WRAPPED WITH HUNTS PROCESS NO. 3 EXTENDING MIN. 12" ABOVE GRADE.
 - INTERIOR CONDUITS SHALL BE ELECTRICAL METALLIC TUBING HAVING U.L. LABEL, FITTINGS SHALL BE GLAND RING COMPRESSION TYPE.
 - FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. NO SUCH CONDUIT SHALL EXCEED SIX FEET IN LENGTH.
 - ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
 - PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
 - PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH SECTION NO. 4305 AND NO. 4304 OF THE U.B.C.
 - DRILLING OR CORING HOLES IN CONCRETE WALLS OR DECKS, WHETHER FOR FASTENING OR ANCHORING PURPOSES, REQUIRES THAT TENDONS OR REINFORCING STEEL MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT (X-RAY OR OTHER DEVICE) THAT CAN ACCURATELY LOCATE THEM. TENDONS OR REINFORCING MUST NOT BE DRILLED, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES.
 - UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO PROJECT MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
 - CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF BOTH TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
 - CONTRACTOR SHALL PROVIDE LABOR AND MATERIALS AS NECESSARY TO COMPLETE THE INSTALLATION OF ANY TOWER LIGHTING SYSTEM DESCRIBED IN THE RFQ.



DESIGN 1
OF EDNA LTD.
ROBERT J. DAVIS, AIA
ARCHITECT
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EDEN PRAIRIE, MN 55344
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9955 59th Avenue North
Suite # 120
Plymouth, MN 55442

VERIZON WIRELESS

PROJECT: 2004019518
ND04
ROUGH RIDER
3204 EAST RIVER ROAD
MEDORA, ND 58645

SHEET CONTENTS:
GENERAL ELECTRICAL NOTES
SITE UTILITY PLAN
COMPOUND PLAN
ONE-LINE RISER DIAGRAM
PANEL SCHEDULE
TELCO ENTRY BOX DETAIL

DRAWN BY: DMW
DATE: 02 NOV 2004
CHECKED BY:
REV A: 11-03-04
REV B: 01-03-05
REV C: 03-09-05

E-1

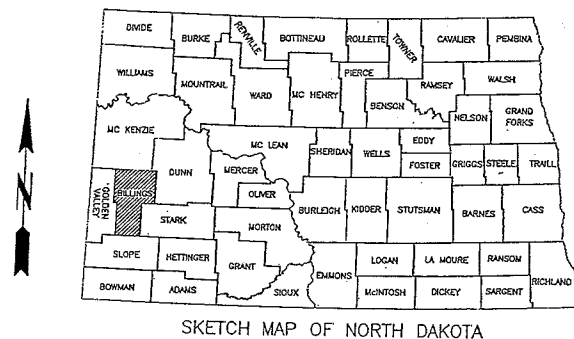
VERIZON ND4 ROUGHRIDER
ACCESS ROAD
UEI #304.306

Design 1

Eden Prairie, MN

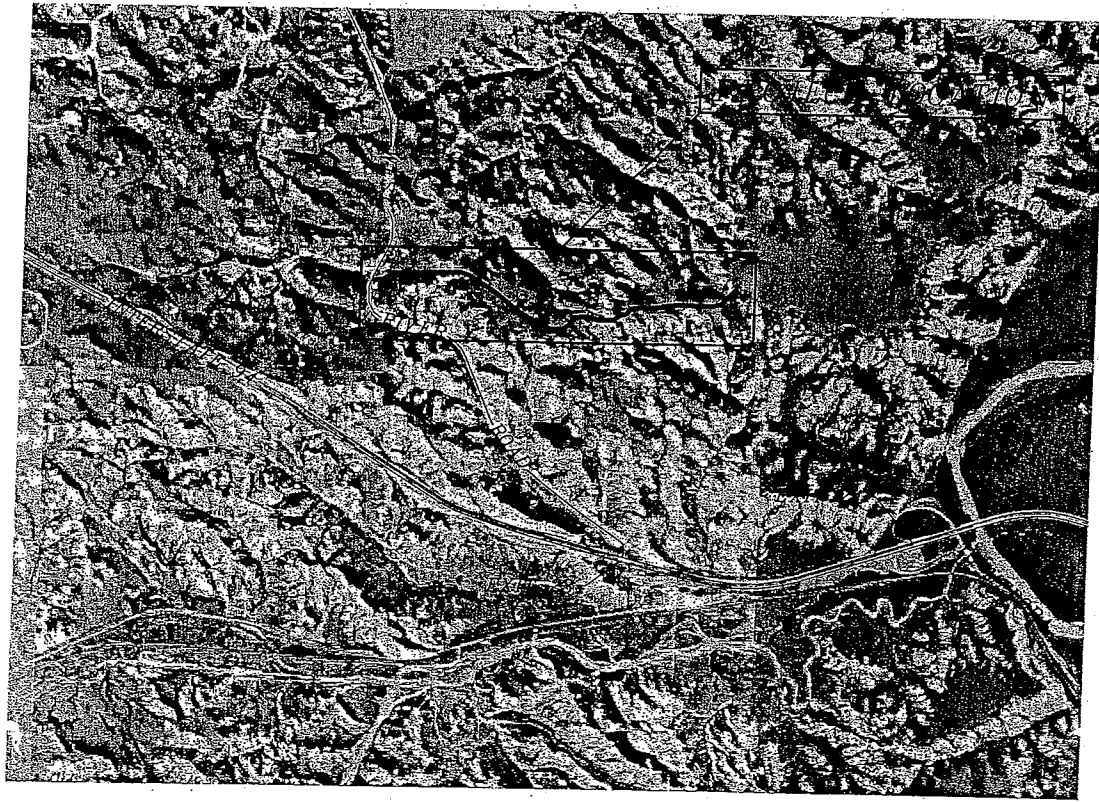
Revision	Date	Number	By
1			

GENERAL NOTES



SKETCH MAP OF NORTH DAKOTA

VICINITY MAP
NO SCALE



ENGINEER'S CERTIFICATE

I, CLINTON KNUTSON, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH DAKOTA, HEREBY CERTIFY THAT THE PLANS FOR THE VERIZON ND4 ROUGHRIDER ACCESS ROAD, MEDORA, NORTH DAKOTA, WERE PREPARED UNDER MY SUPERVISION AND ARE COMPLETE AND CORRECT TO THE BEST OF KNOWLEDGE AND BELIEF.

CLINTON KNUTSON, PE
REGISTERED PROFESSIONAL ENGINEER
NORTH DAKOTA REGISTRATION NO. 4523

SHEET INDEX

TITLE PAGE	SHEET C1
DETAILS, GENERAL NOTES & QUANTITIES SHEET	SHEET C2
ROAD PLAN & PROFILE	SHEETS C3-C6
ROAD CROSS-SECTIONS	SHEETS X1-X22

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Drawn By: AJW
Checked By: CJK
Approved By: CJK

COVER SHEET

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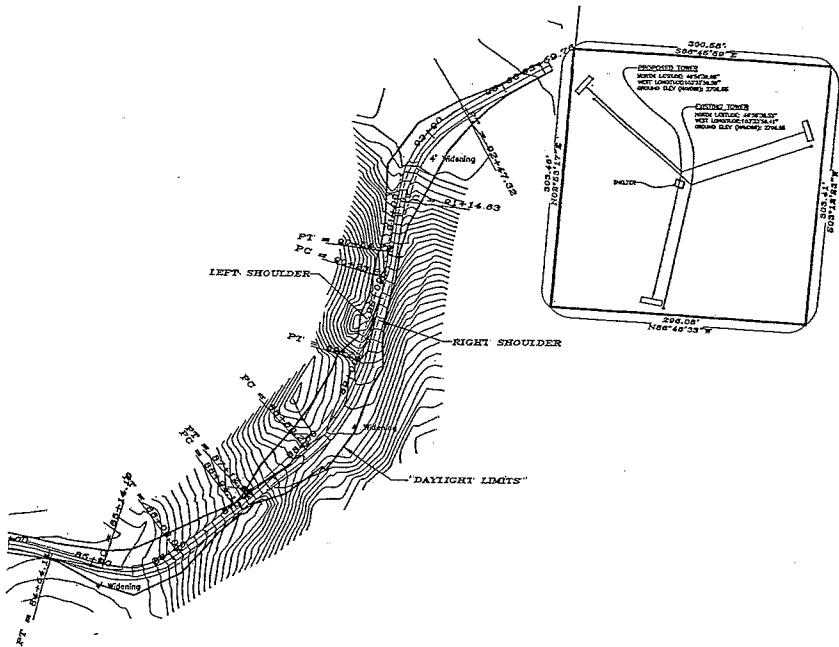
December 30, 2004

Project Number: 304.306
Date: December 28, 2004
C001

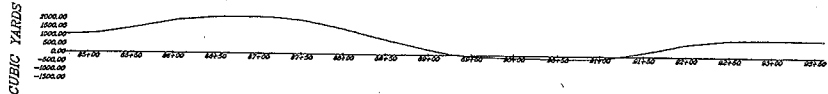
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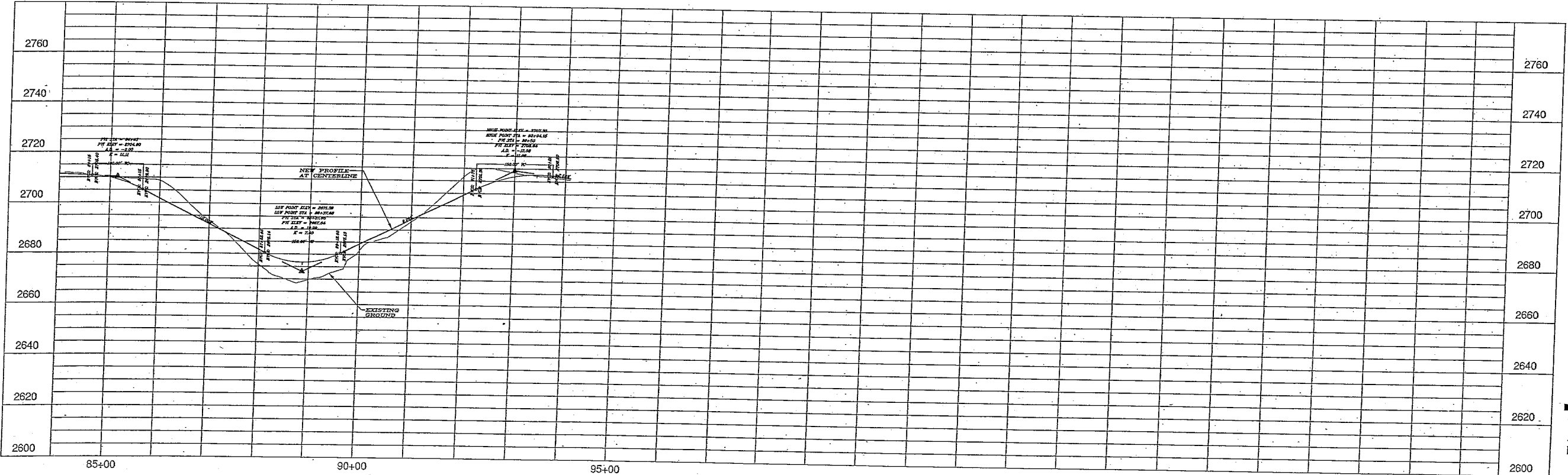
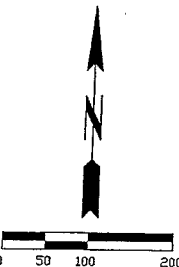
Revision	Date	Number	By
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PLAN NOTES OR GENERAL NOTES			



MASS HAUL DIAGRAM



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Date: _____ License Number: 4523



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Verizon ND4 Roughrider
Access Road
Plan & Profile

Project Number: 304.302
Date: December 1, 2004
Sheets: 6 of 28

December 30, 2004

C006

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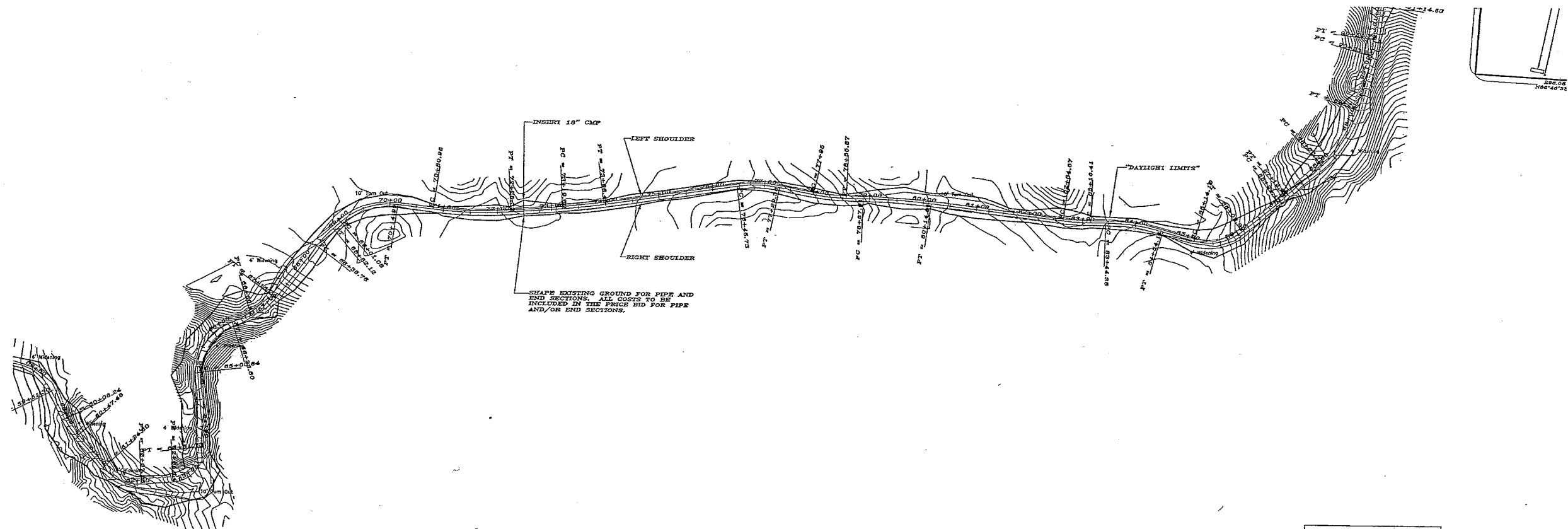
Eden Prairie, MN

Revision	Date	Number	By
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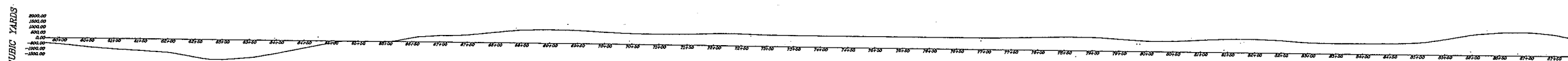
PLAN NOTES OR GENERAL NOTES

18-INCH PIPE CULVERT
 STA 72+50 26.5 LF
 Rt Inv 2724.66 STA 72+50 - 9.0 FT
 Lt Inv 2722.69 STA 72+50 - 17.5 FT

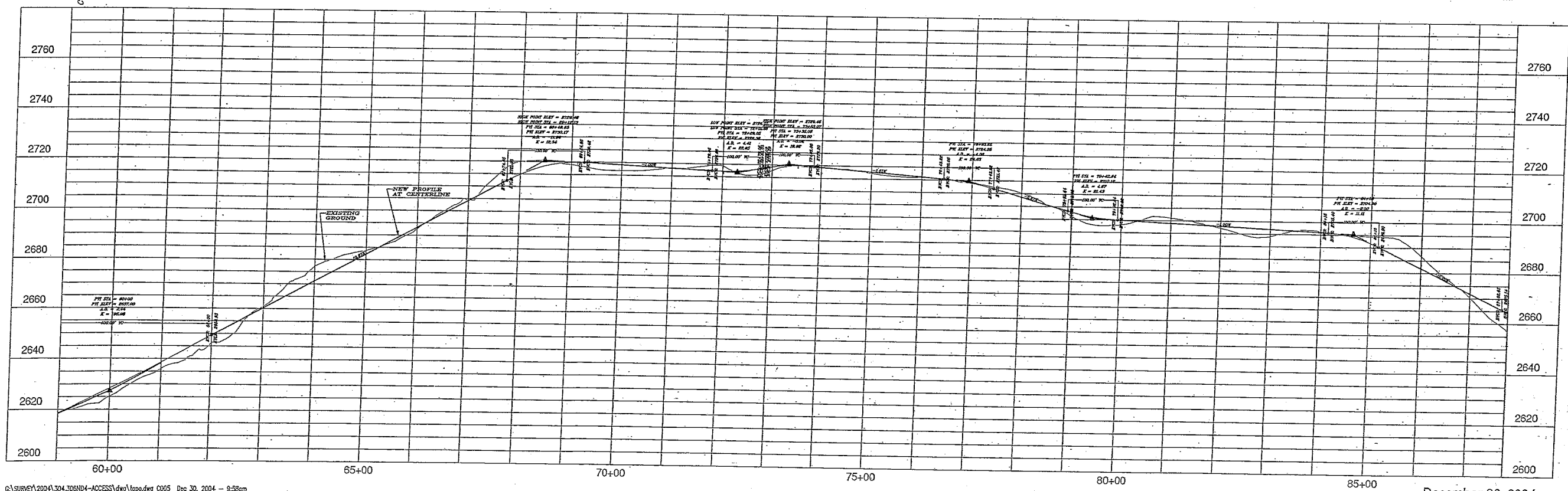
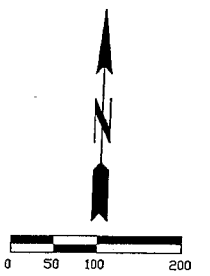
END SECTION FOR 18-INCH PIPE CULVERT
 STA 72+50 Lt&Rt 2EA



MASS HAUL DIAGRAM



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Print Name: Clinton Krutson

Signed: _____

Date: _____ License Number: 4523



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Verizon ND4 Roughrider
 Access Road
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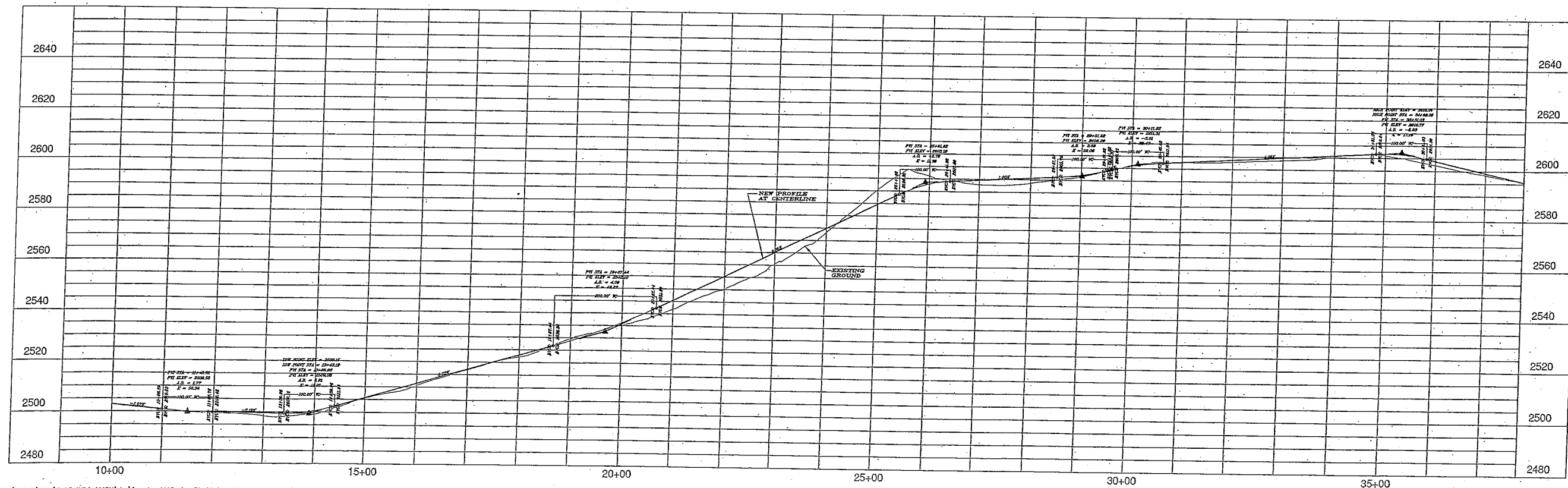
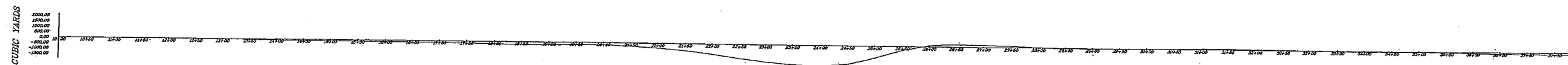
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 Date: December 1, 2004
 Sheets: 5 of 26

C005

den Prairie, MN

PLAN NOTES OR GENERAL NOTES

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Access Road
Plan & Profile

Project Number: 304.306
Date: December 1, 2004
Sheets: 3 of 28

C003

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			

PLAN NOTES OR GENERAL NOTES

18-INCH PIPE CULVERT
INVERTS AND STATIONS GIVEN FOR END OF
PIPE NOT END OF END SECTION UNLESS
OTHERWISE STATED. CULVERTS MUST HAVE
MINIMUM BURY OF 1'.

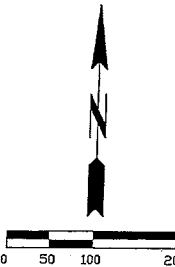
STA 41+50 20.5 LF
Rt Inv 2585.65 (Before Bend Up) STA 41+50 - 8.0 Ft Rt
Lt Inv 2585.40 STA 41+50 - 10.5 Ft Lt

STA 52+75 28.0 LF
Rt Inv 2578.20 STA 52+75 - 12.0 Ft Rt
Lt Inv 2576.91 STA 52+75 - 16.0 Ft Lt

STA 64+00 28.5 LF
Rt Inv 2577.00 STA 64+00 - 11.0 Ft Rt
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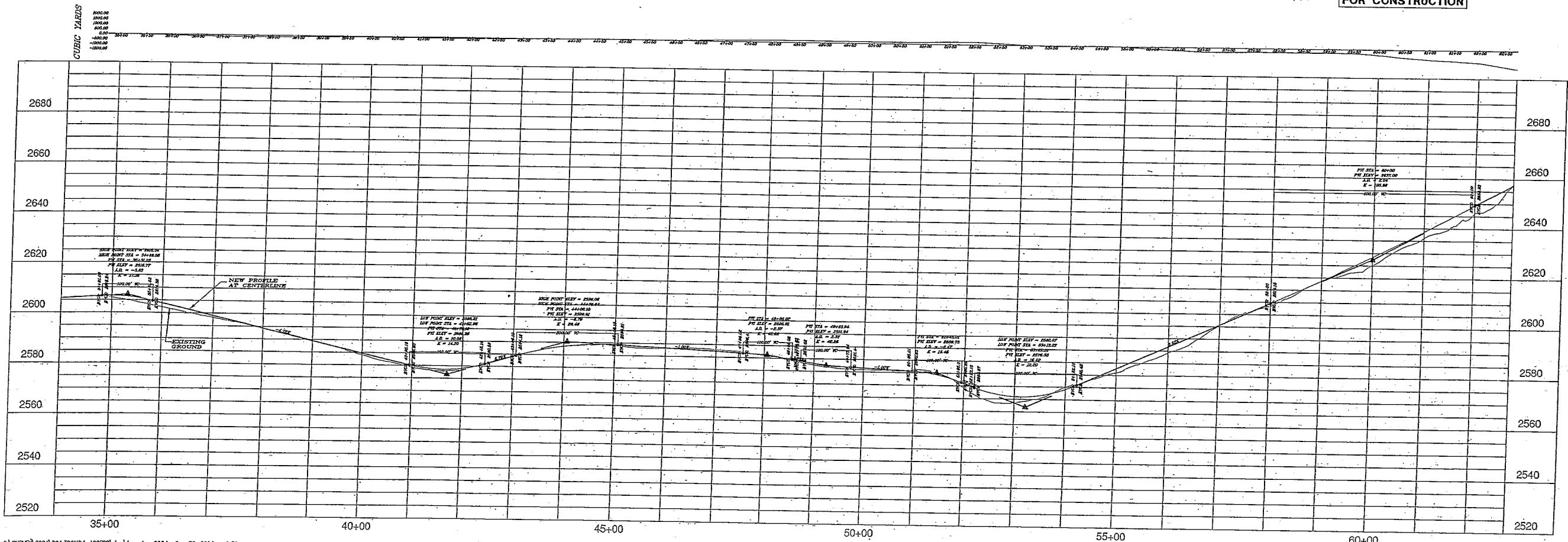
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STA 41+50	Lt&Rt	2EA
STA 52+75	Lt&Rt	2EA
STA 64+00	Lt	1EA
STA 63+75	Rt	1EA



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MASS HAUL DIAGRAM



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Date: License Number: 4523



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Verizon ND4 Roughrider
Access Road
Plan & Profile

Project Number: 304.306
Date: December 1, 2004
Sheet: 4 of 28

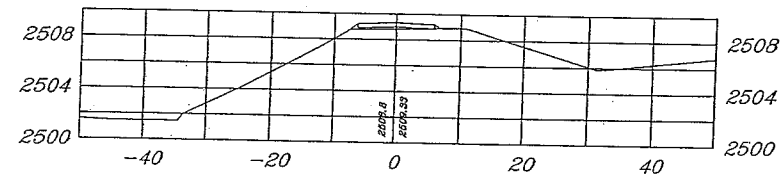
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Design 1

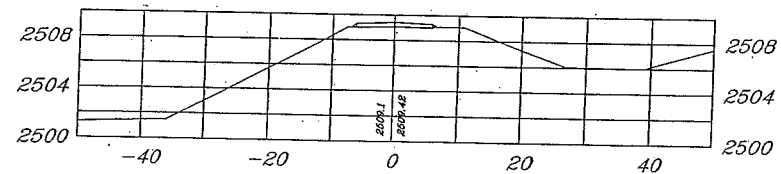
Eden Prairie, MN

Revision	Date	Number	By
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PLAN NOTES OR GENERAL NOTES			

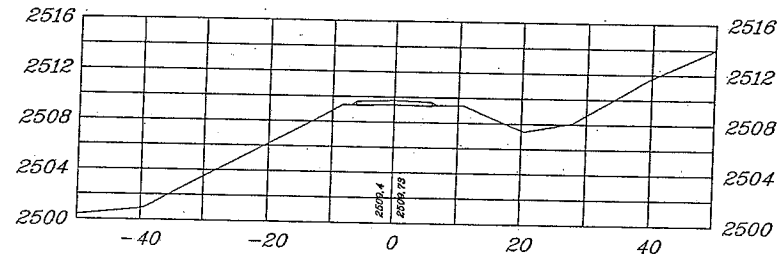
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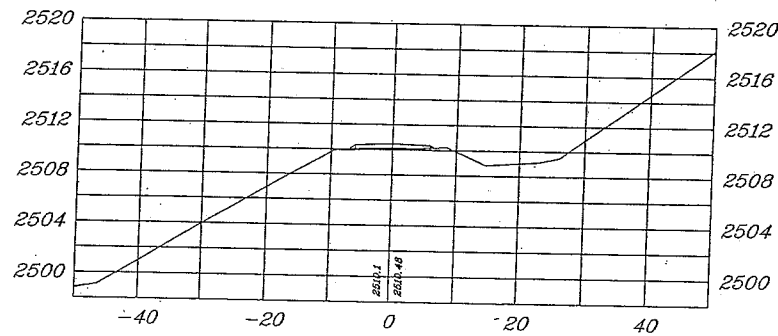
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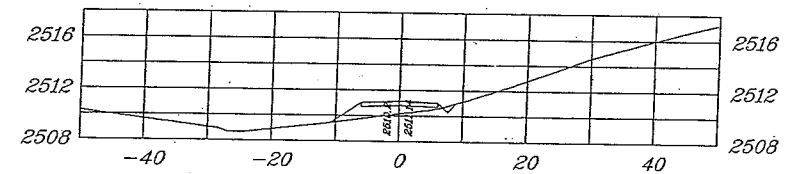
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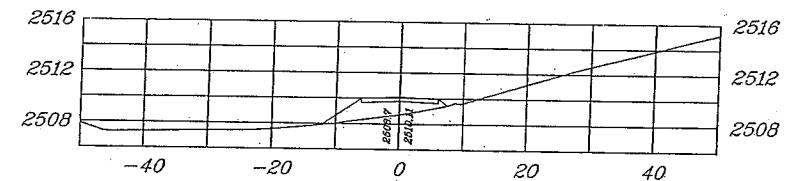
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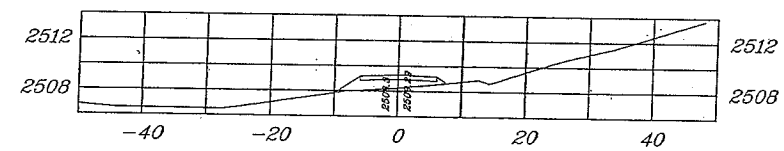
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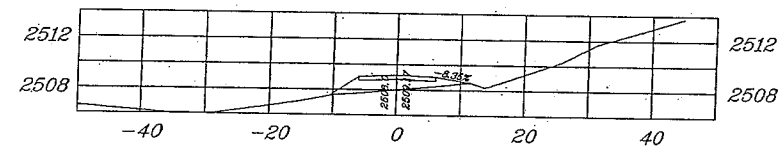
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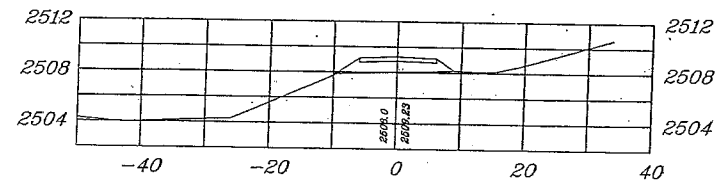
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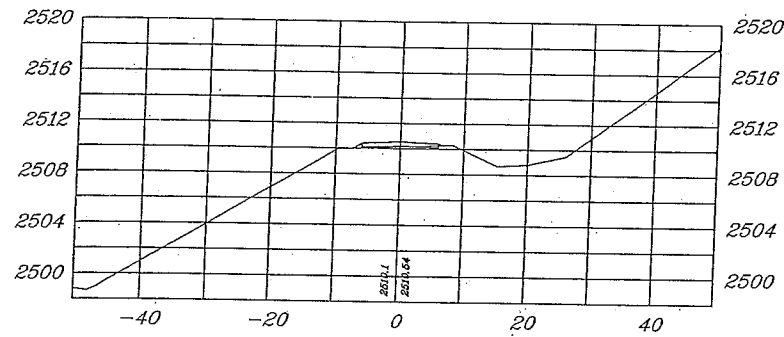
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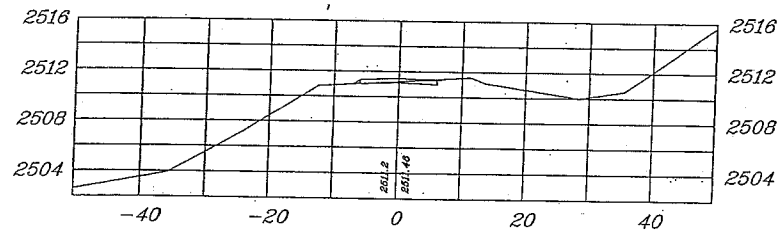
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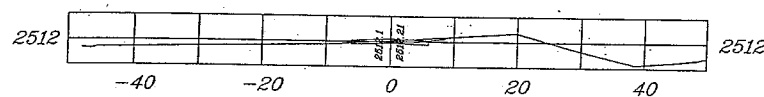
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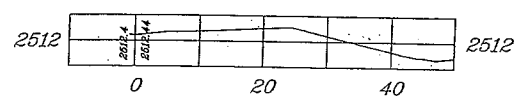
10+50



10+11.88



10+00



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Signed: _____

Date: _____ License Number: 4523

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Access Road Cross-sections
10+96.77 - 13+00

PRELIMINARY NOT
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December 30, 2004

Project Number: 304.908
Date: December 27, 2004
Sheets: 7 of 28

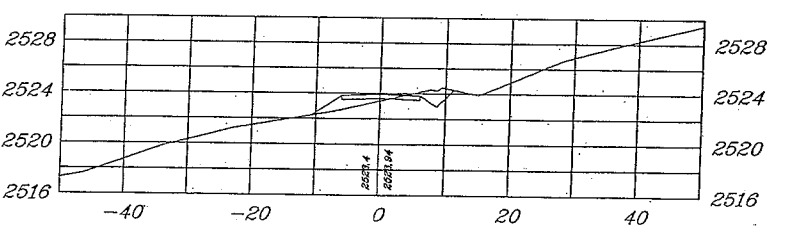
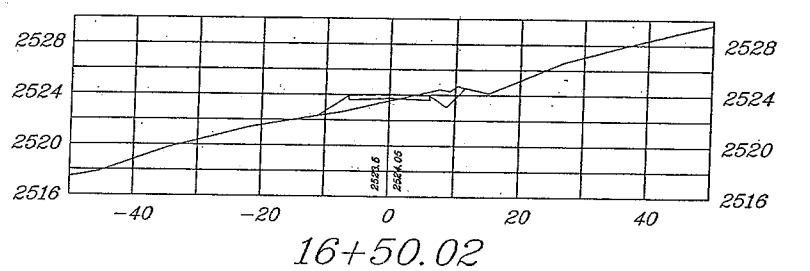
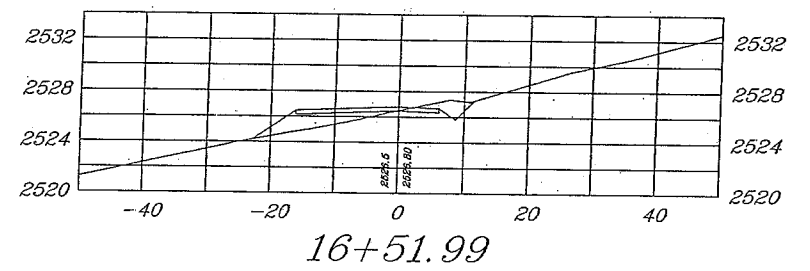
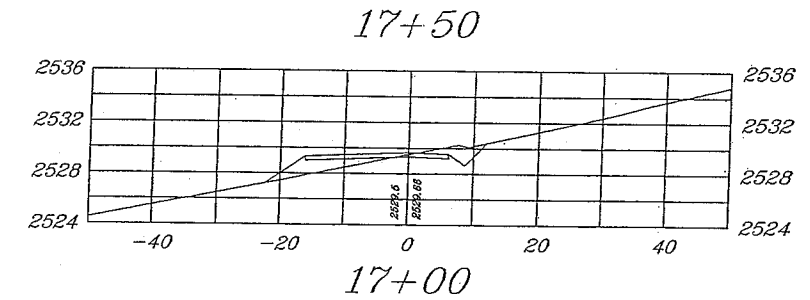
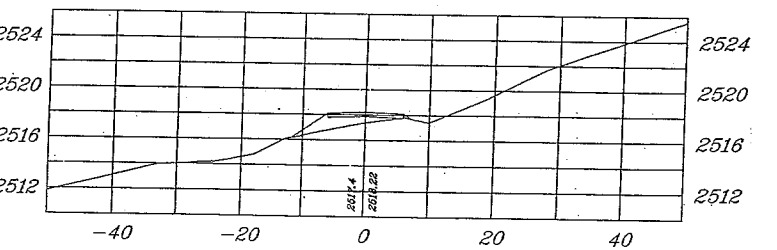
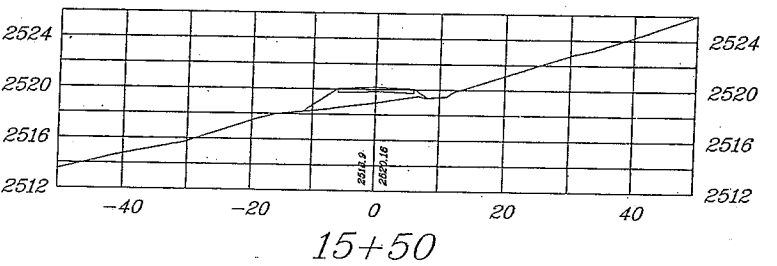
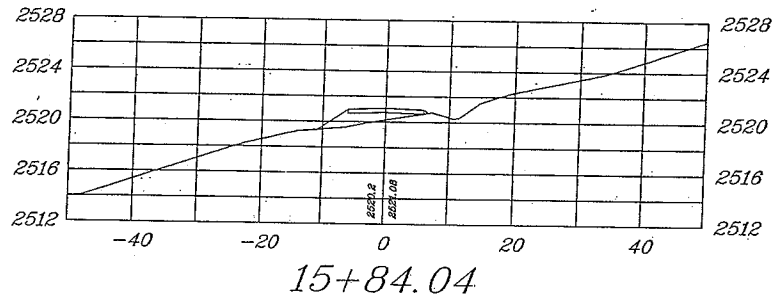
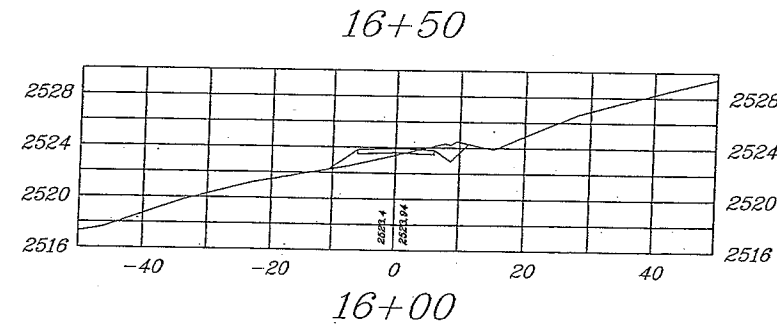
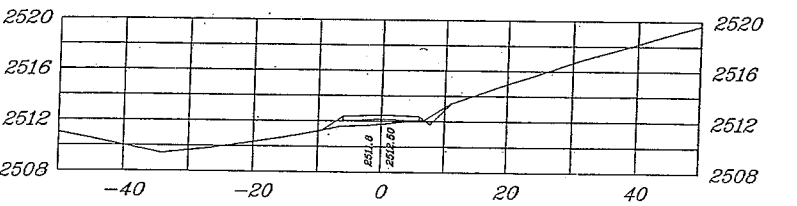
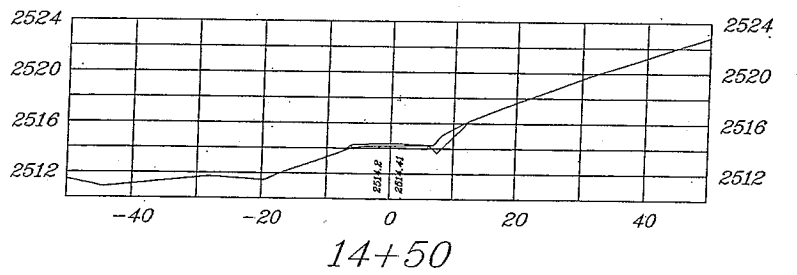
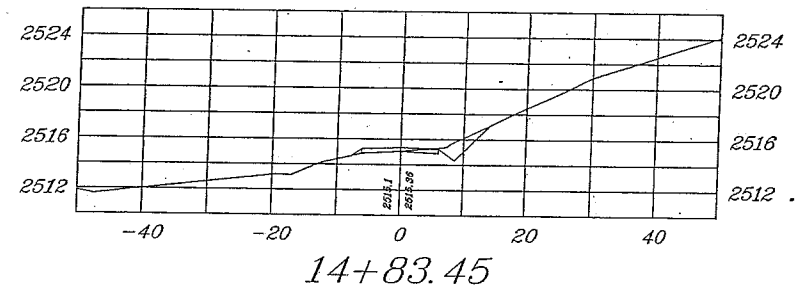
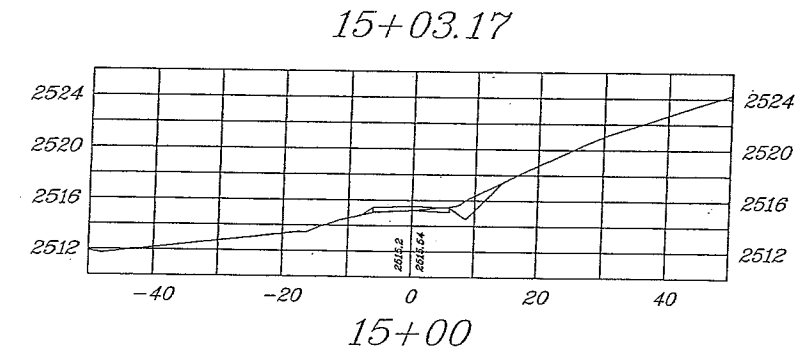
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Design 1

Eden Prairie, MN

Revision	Date	Number	By
1	00/00/00		

PLAN NOTES OR GENERAL NOTES



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December 30, 2004

Project Number: 304.308
Date: December 27, 2004
Sheets: 8 of 23

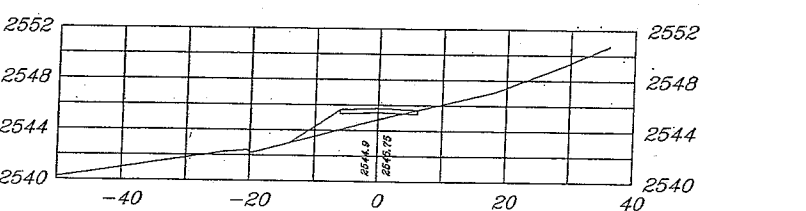
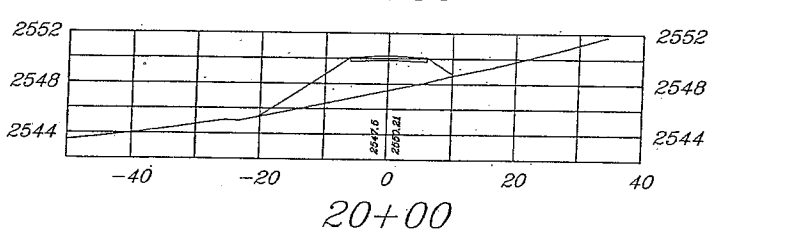
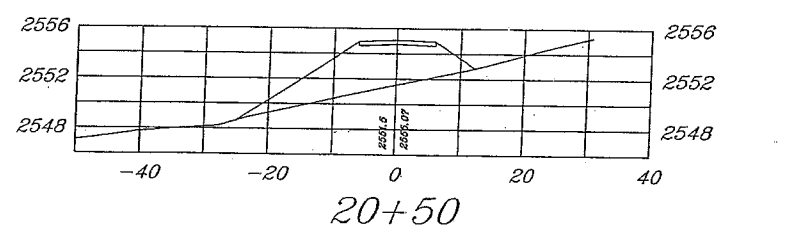
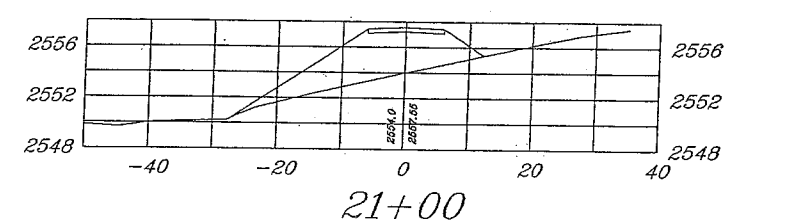
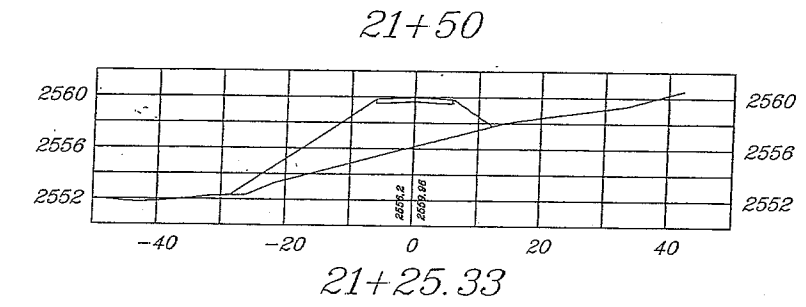
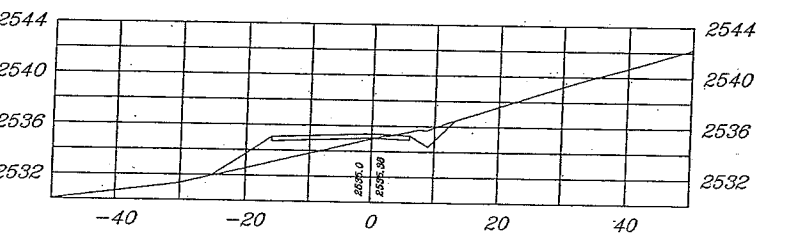
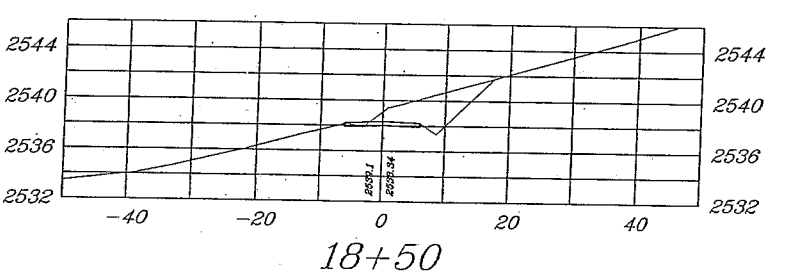
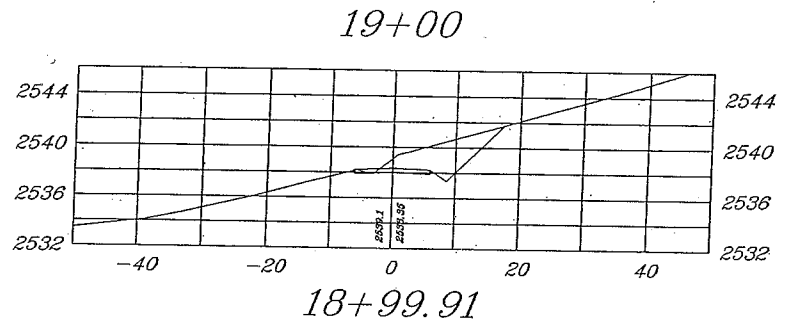
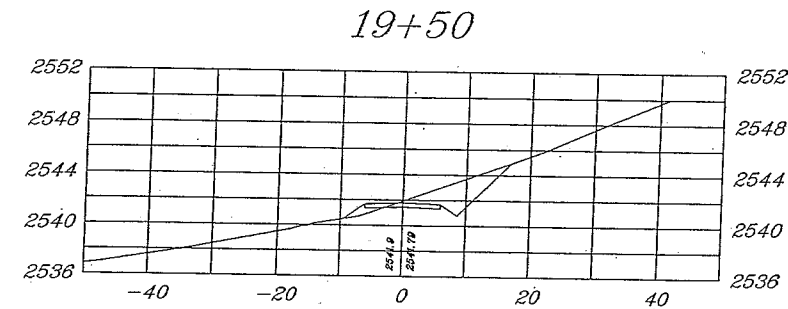
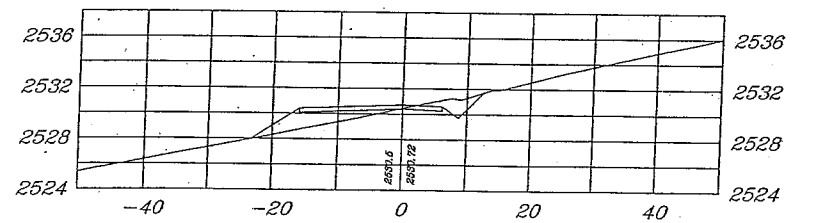
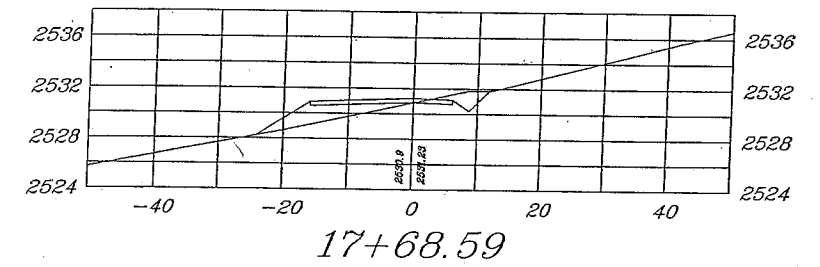
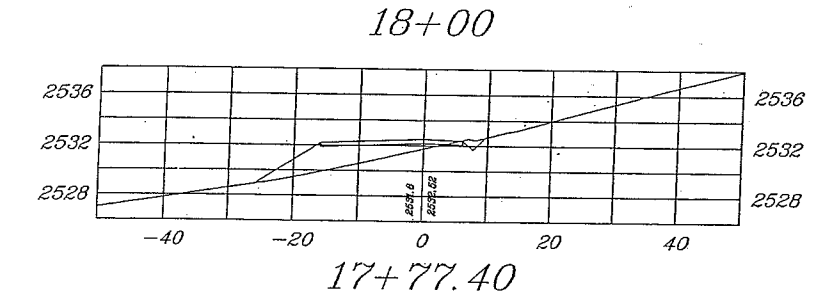
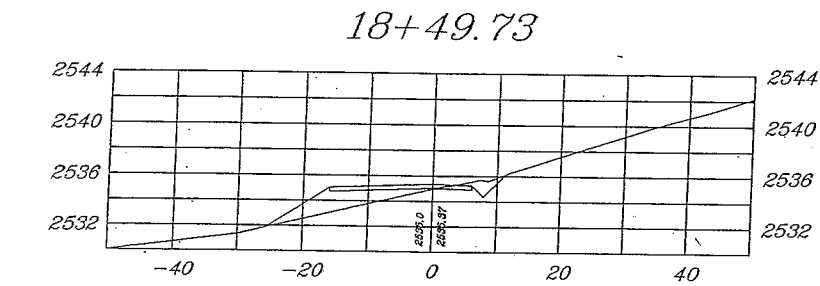
X002

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			

PLAN NOTES OR GENERAL NOTES



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Print Name: Clinton Knutson

Signed: _____

Date: _____ License Number: 4523

Ulteigengineers
Bismarck - Detroit Lakes - Fargo - Minneapolis - Sioux Falls
1412 Basin Avenue
Bismarck, North Dakota 58504
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Web: www.ultei.com
Drawn By: AJW
Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
18+49.73 - 20+00

Project Number: 304.308
Date: December 27, 2004
Sheets: 9 of 28 **X003**

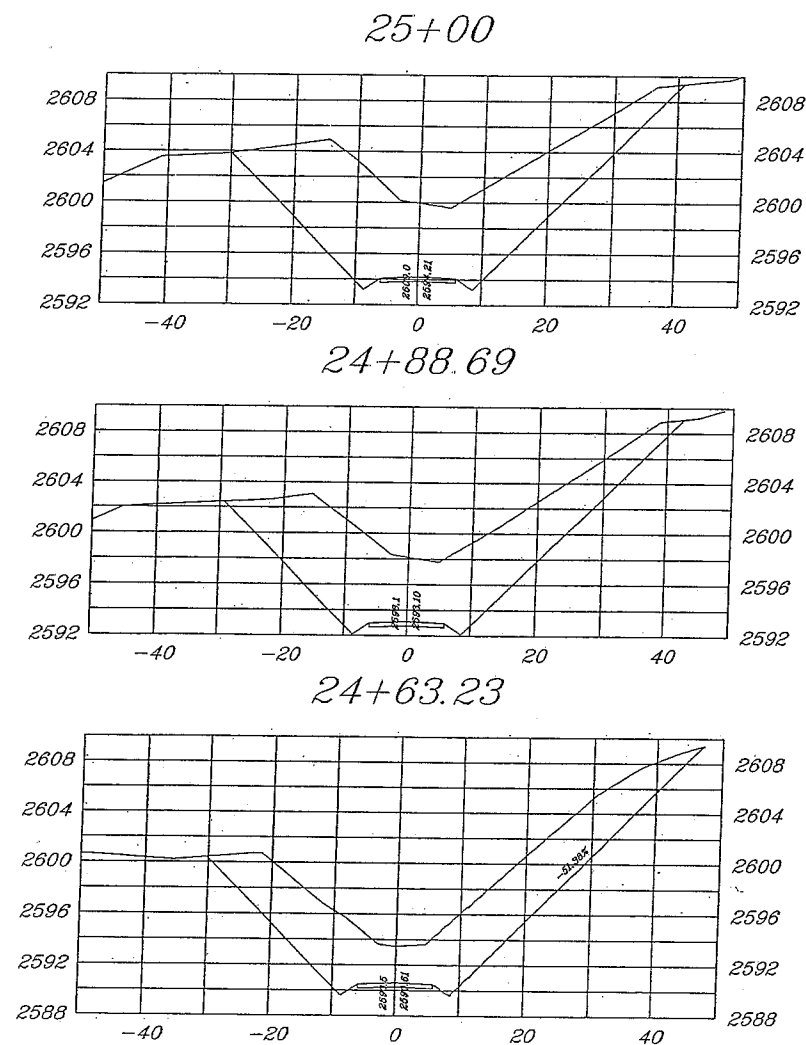
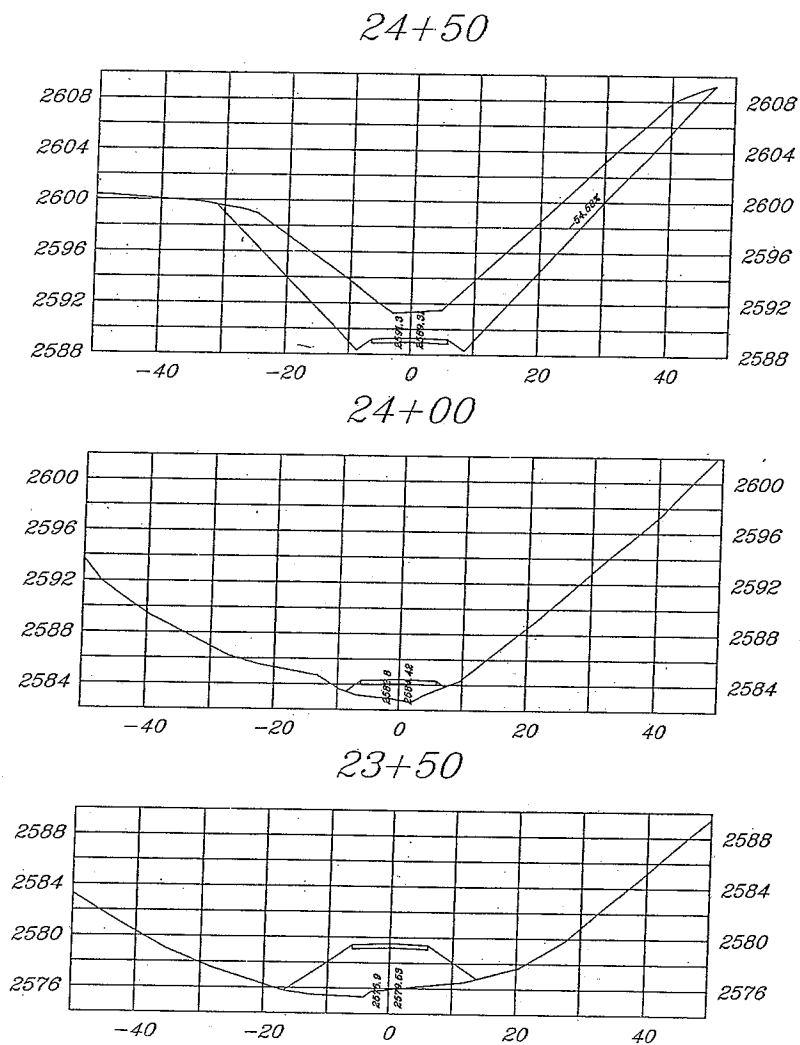
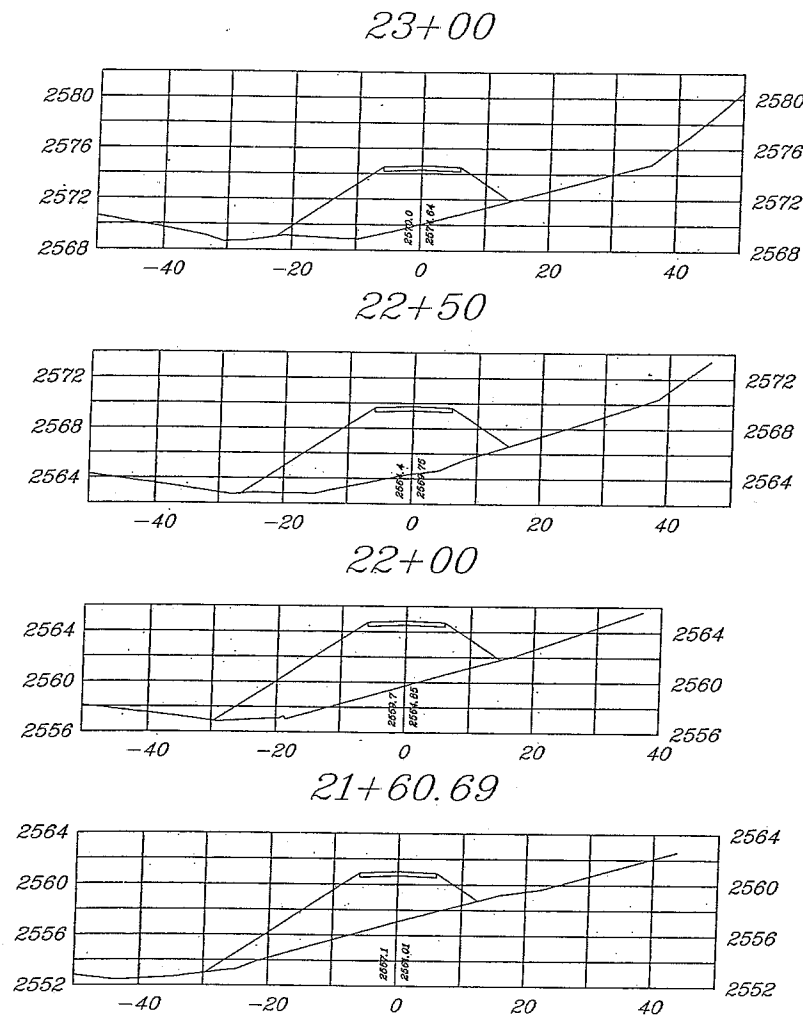
PRELIMINARY NOT
FOR CONSTRUCTION December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			

PLAN NOTES OR GENERAL NOTES



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Date: _____ License Number: 4523

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Drawn By: AJW
Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
23+00 - 24+63.23

Project Number: 304.808
Date: December 27, 2004
Sheets: 10 of 28

X004

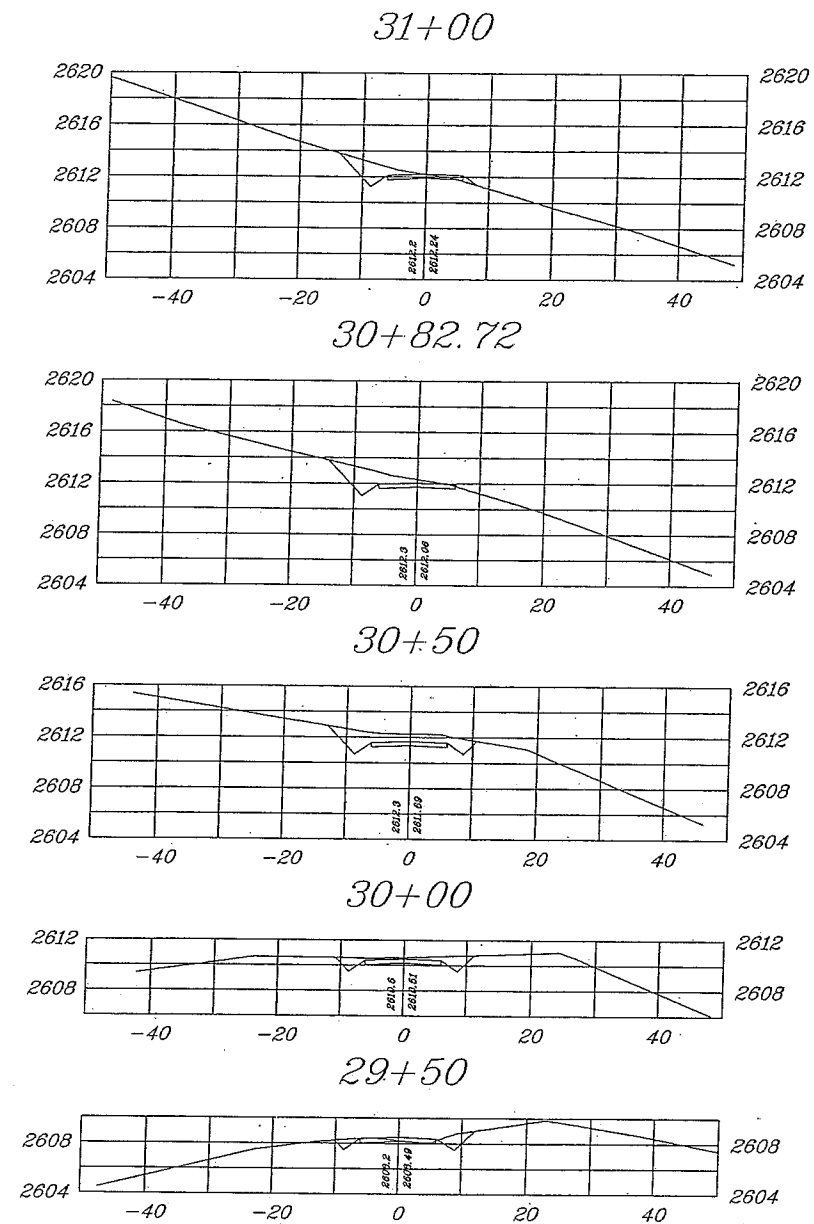
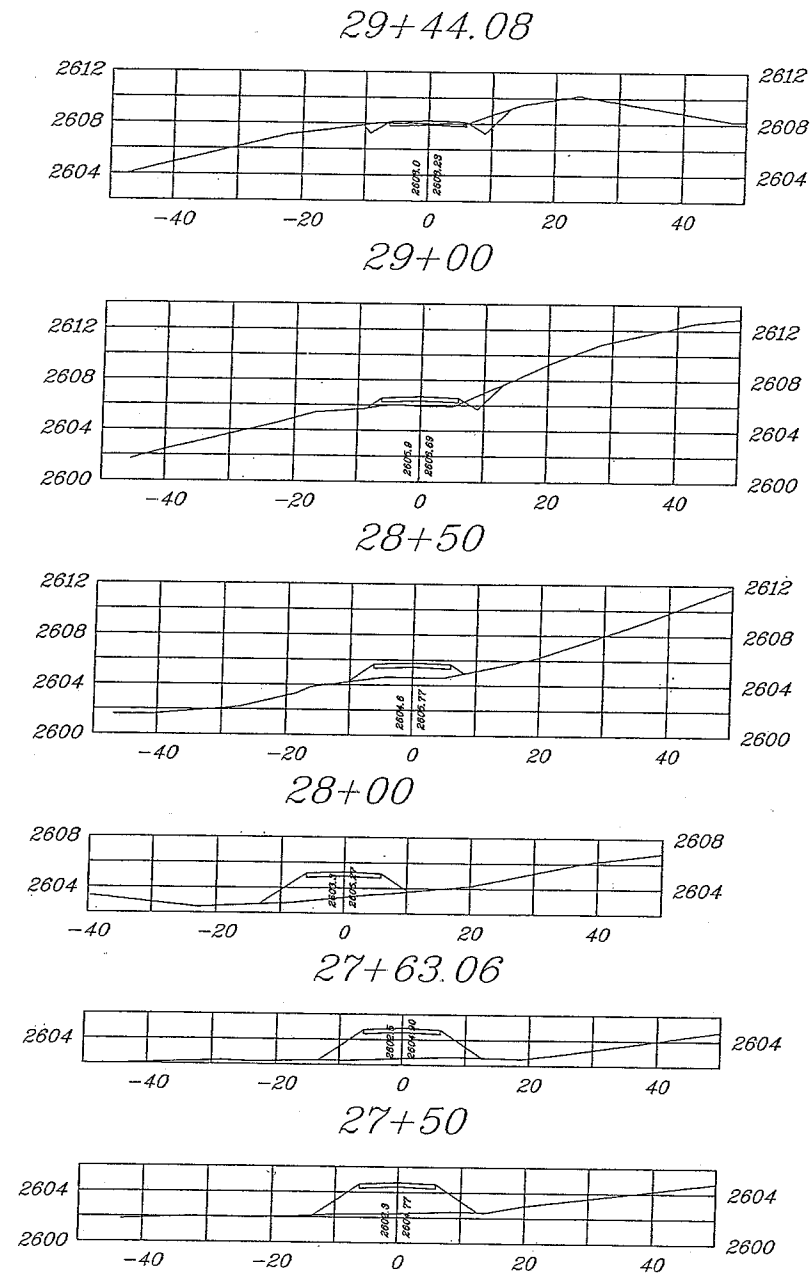
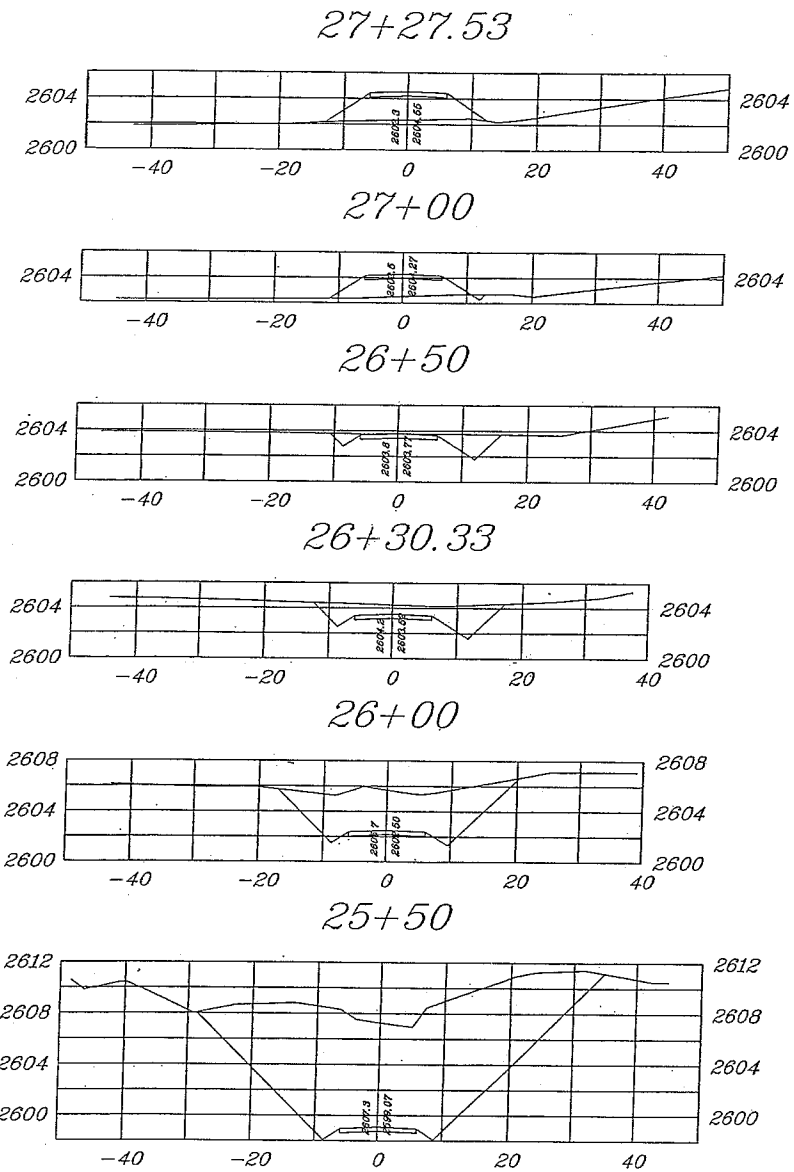
PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Signed: _____

Date: _____ License Number: 4523

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Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
27+27.59 - 29+50

Project Number: 304.306
Date: December 27, 2004
Sheets: 11 of 28

X005

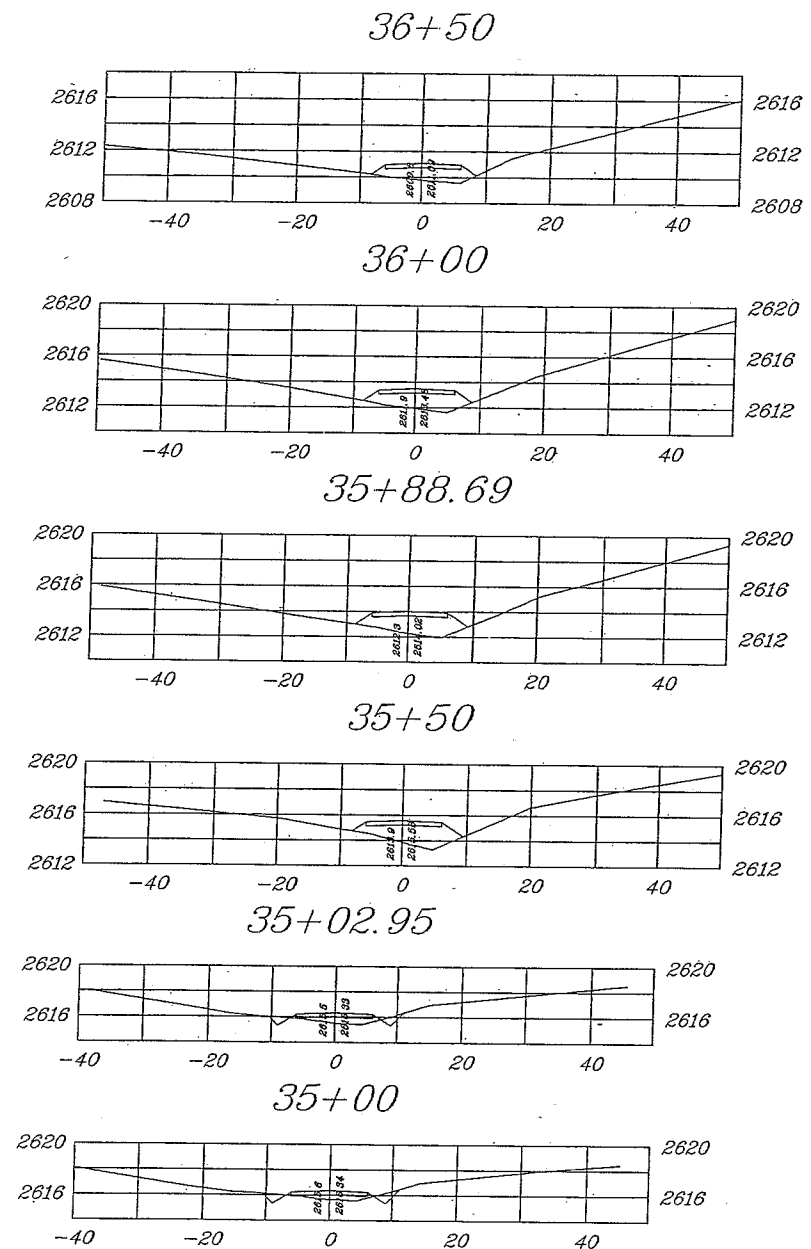
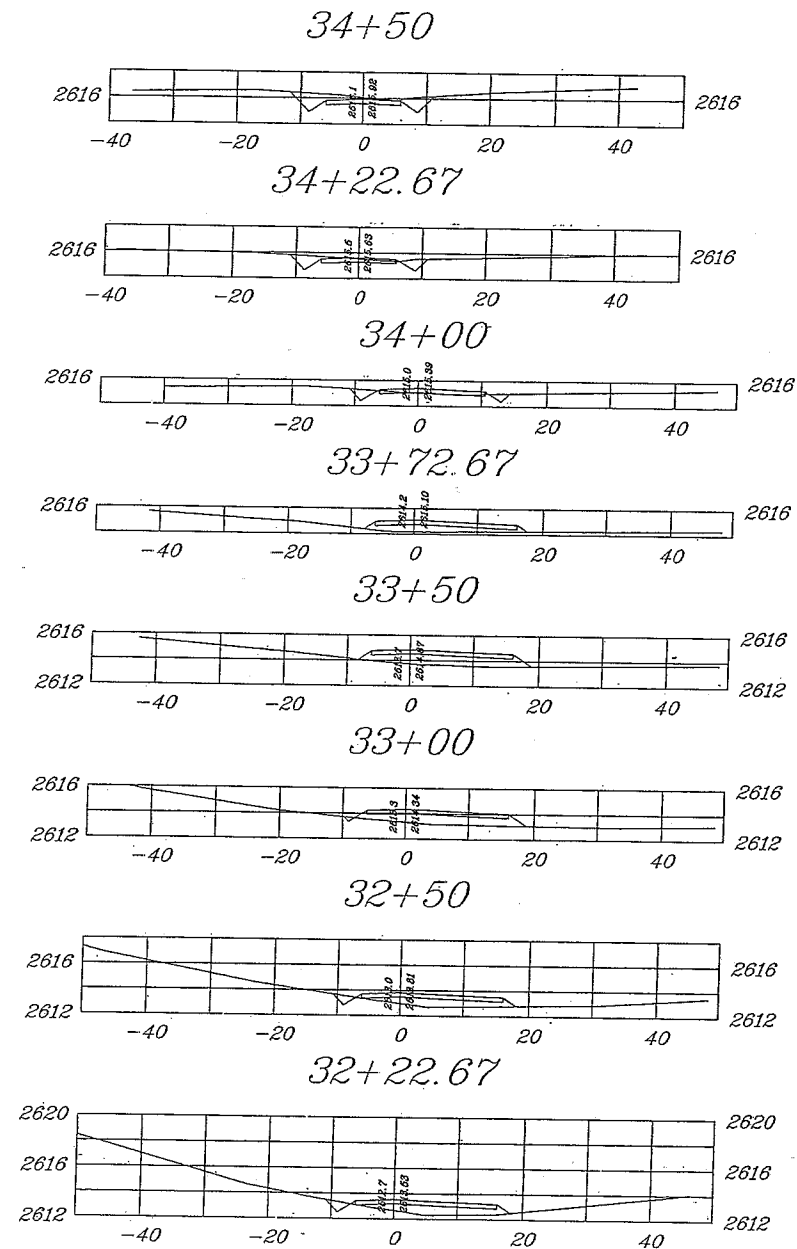
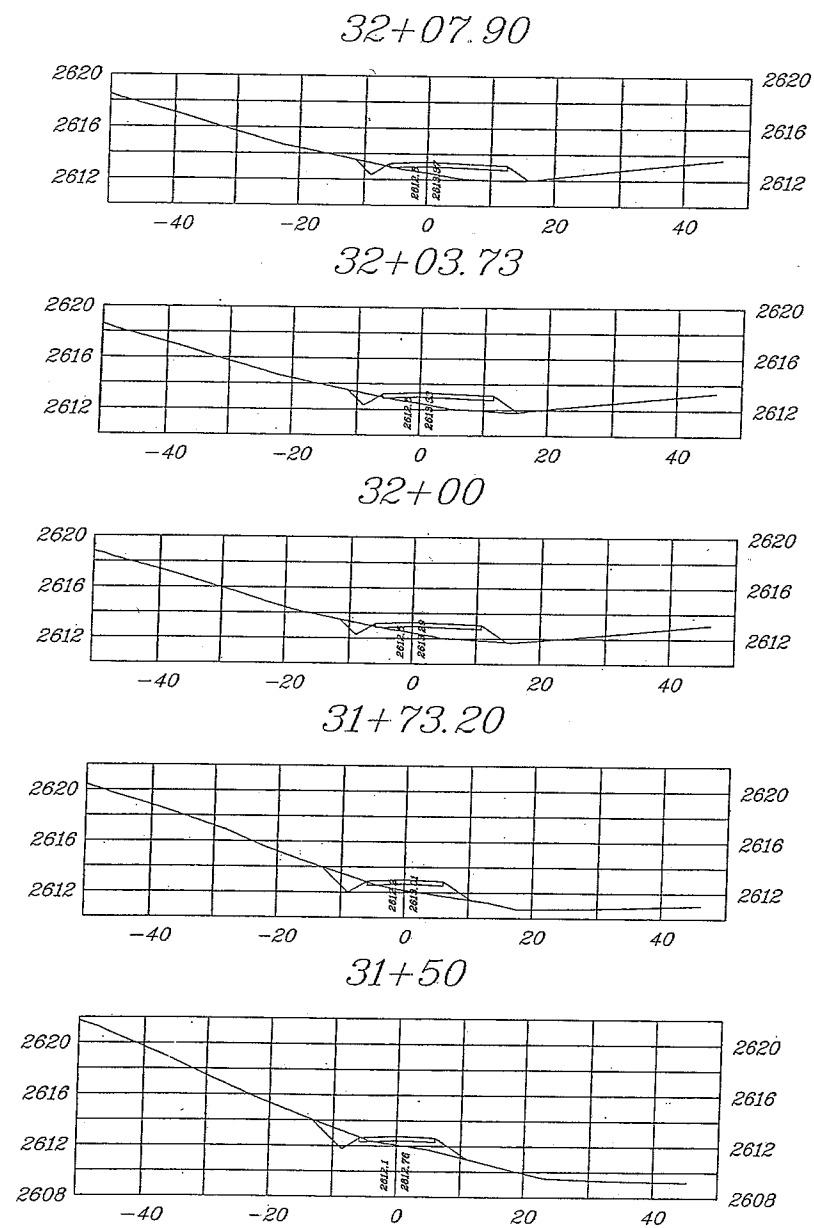
PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Date: _____ License Number: 4523

Ulteigengineers

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Verizon ND4 Roughrider
Access Road Cross-sections
32+07.90 - 35+00

Project Number: 304.305
Date: December 27, 2004
Sheets: 12 of 28

X006

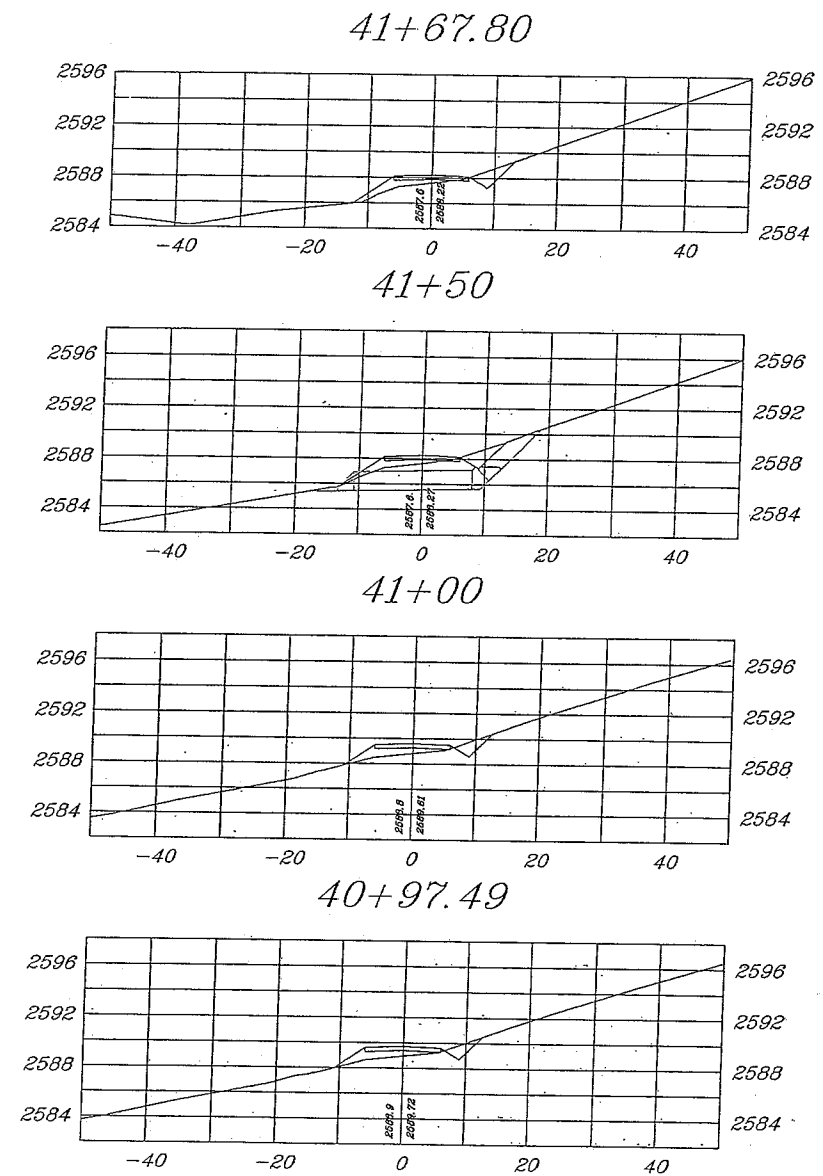
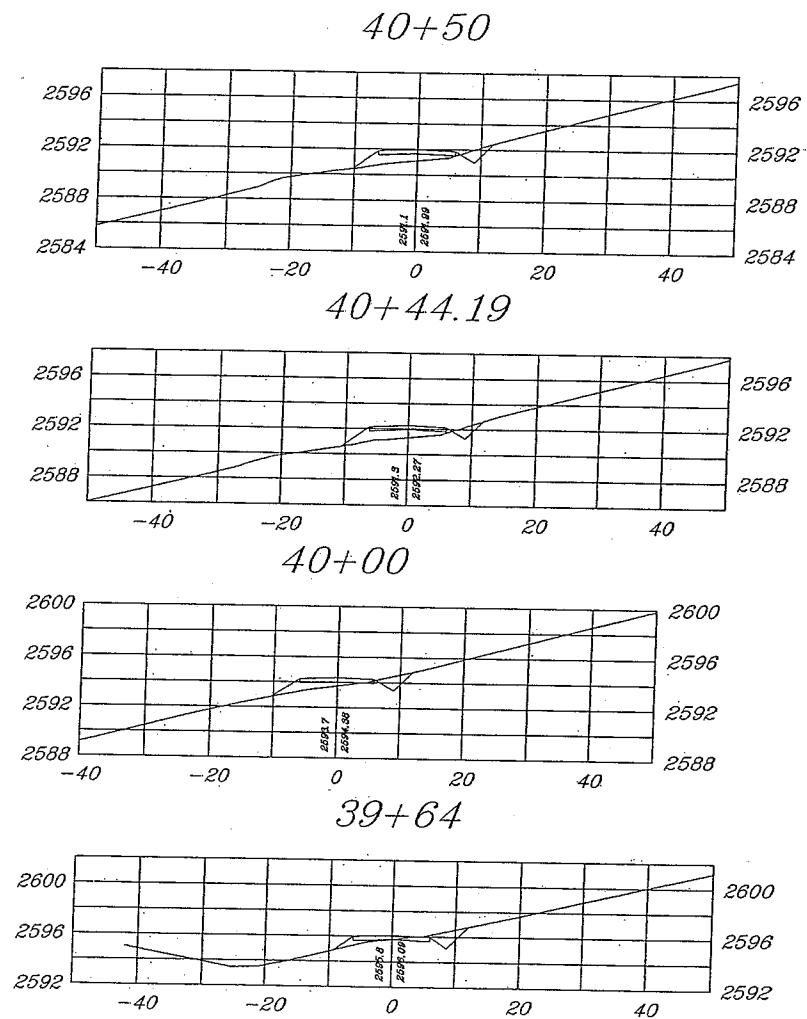
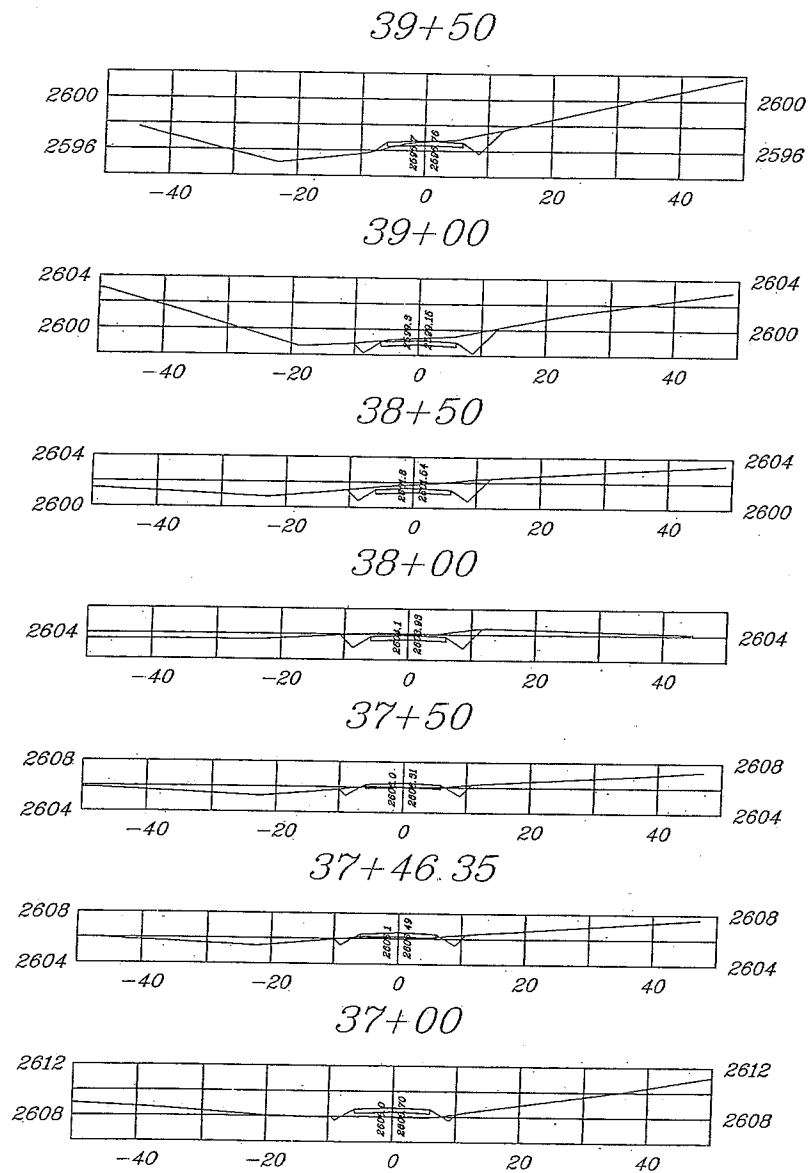
PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Date: _____ License Number: 4523

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Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
39+50 - 40+97.49

PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

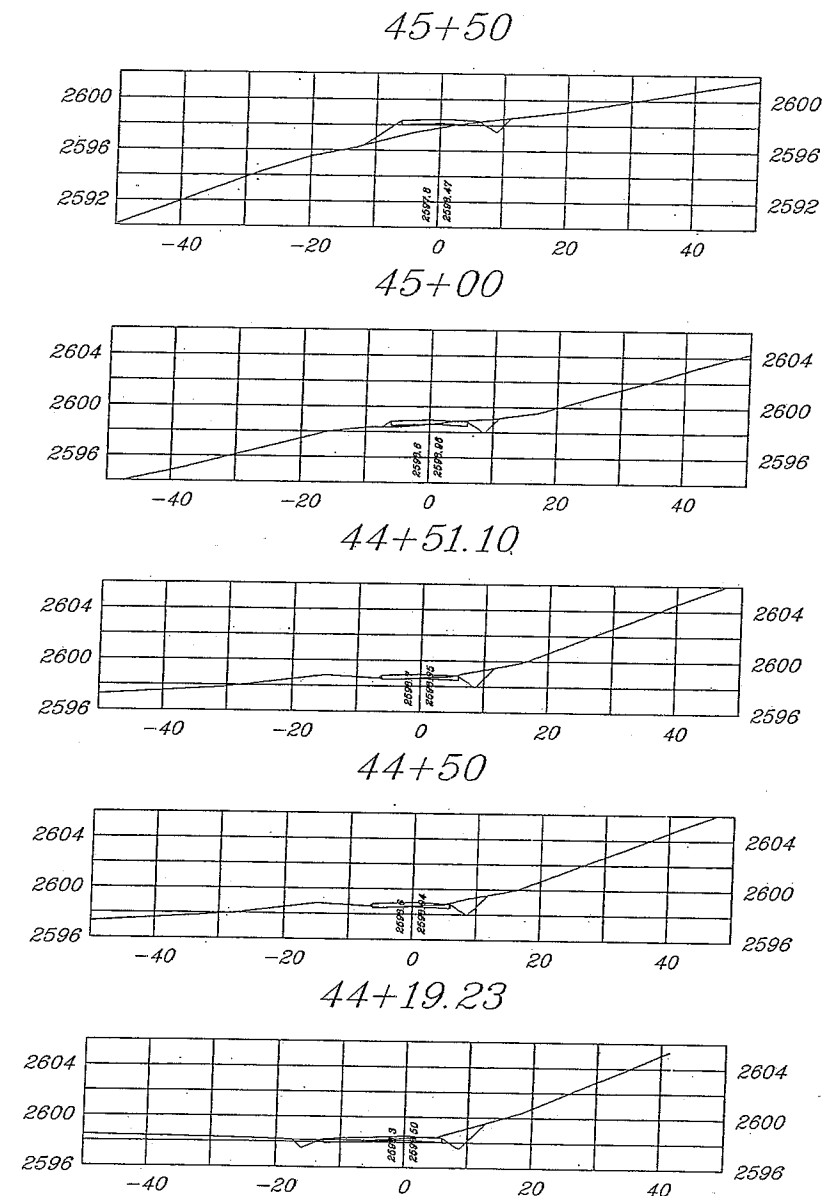
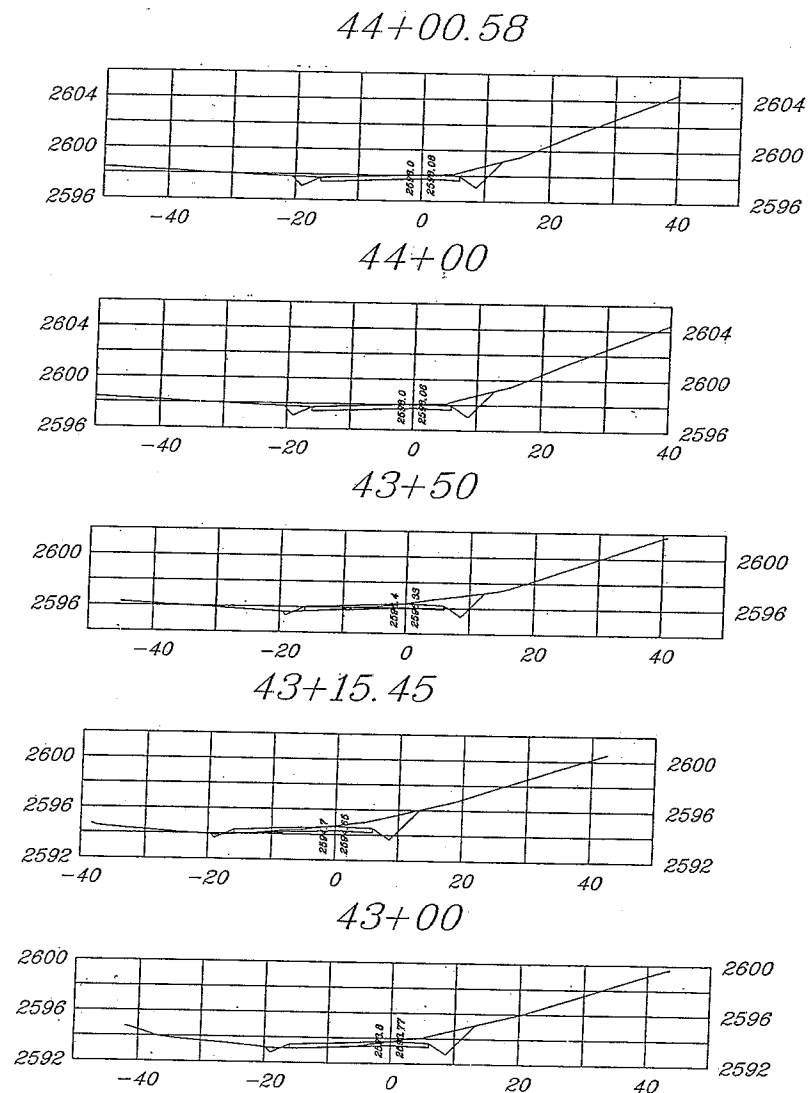
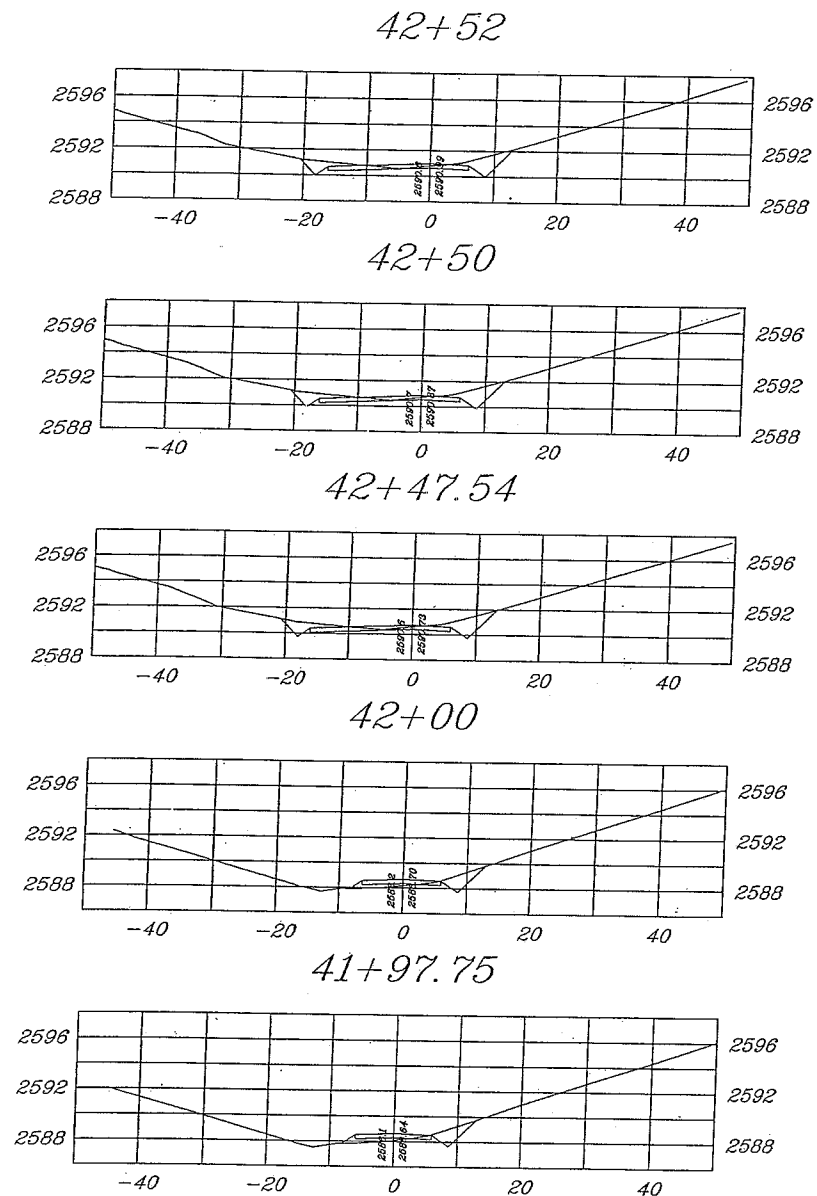
Project Number: 304.306
Date: December 27, 2004
Sheets: 13 of 28

X007

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Signed: _____

Date: _____ License Number: 4523

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 Drawn By: AJW
 Checked By: CJK
 Approved By: CJK

Verizon ND4 Roughrider
 Access Road Cross-sections
 42+52 - 44+19.23

Project Number: 304.306
 Date: December 27, 2004
 Sheets: 14 of 28 **X008**

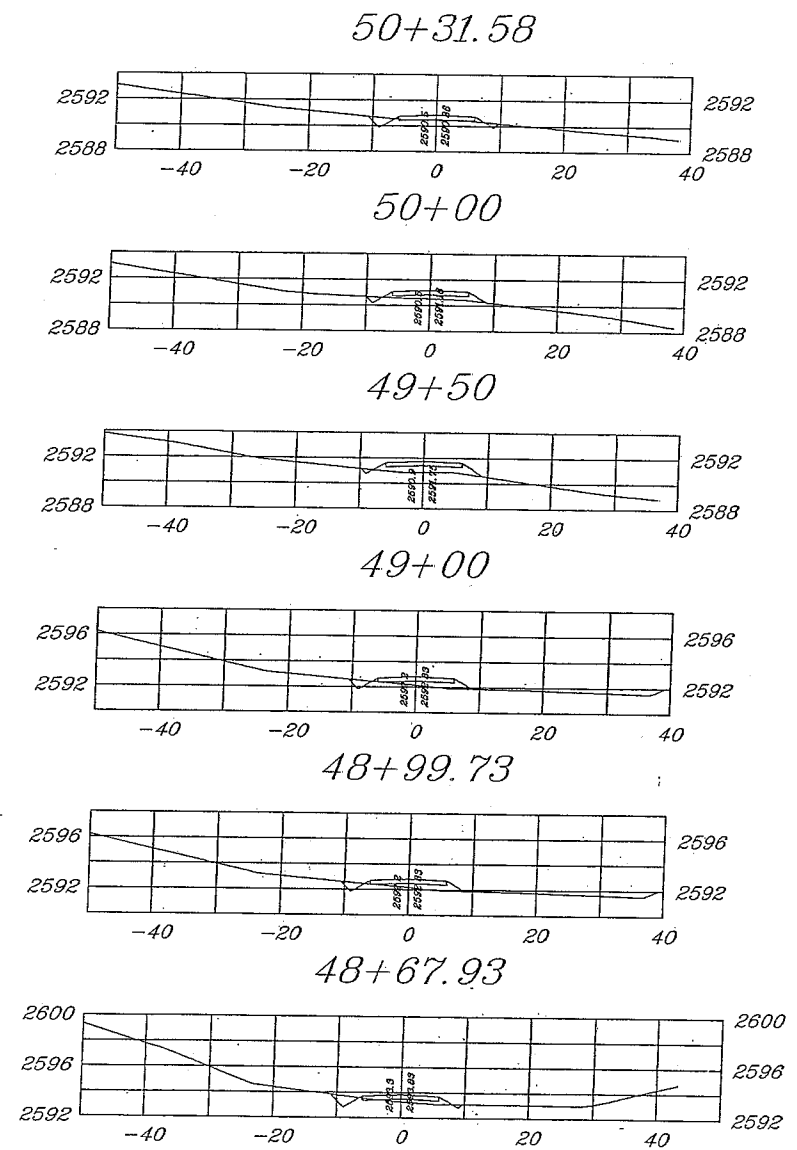
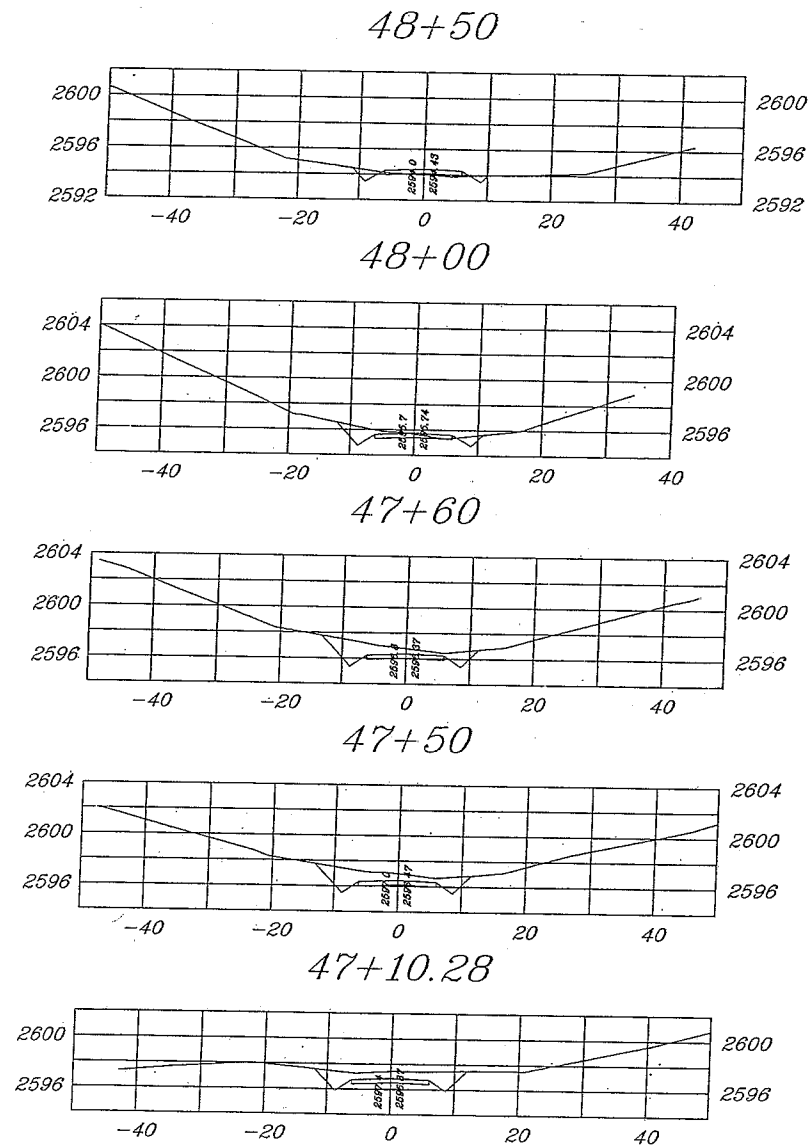
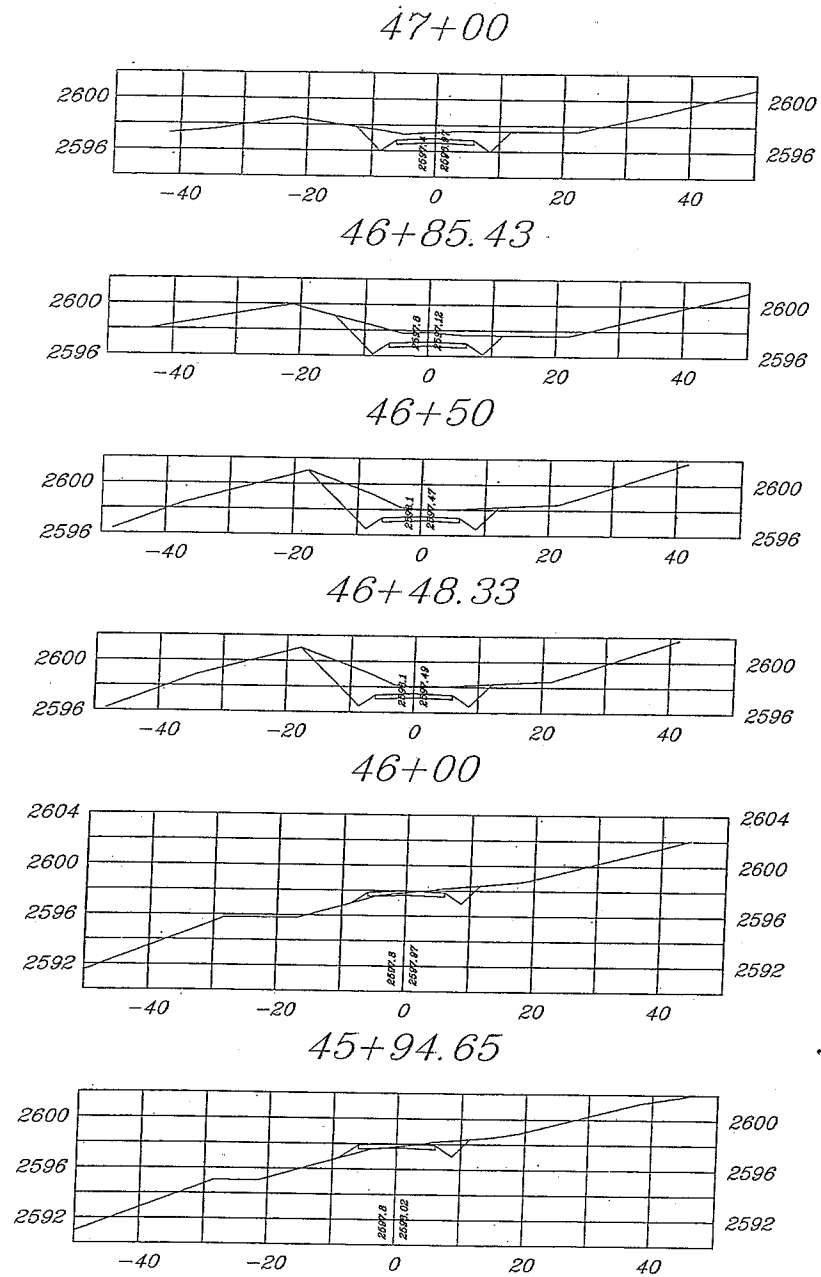
PRELIMINARY NOT
 FOR CONSTRUCTION

December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Date: _____ License Number: 4523

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Web: www.ultieg.com
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Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
47+00 - 48+67.93

Project Number: 304.306
Date: December 27, 2004
Sheets: 15 of 28

PRELIMINARY NOT
FOR CONSTRUCTION

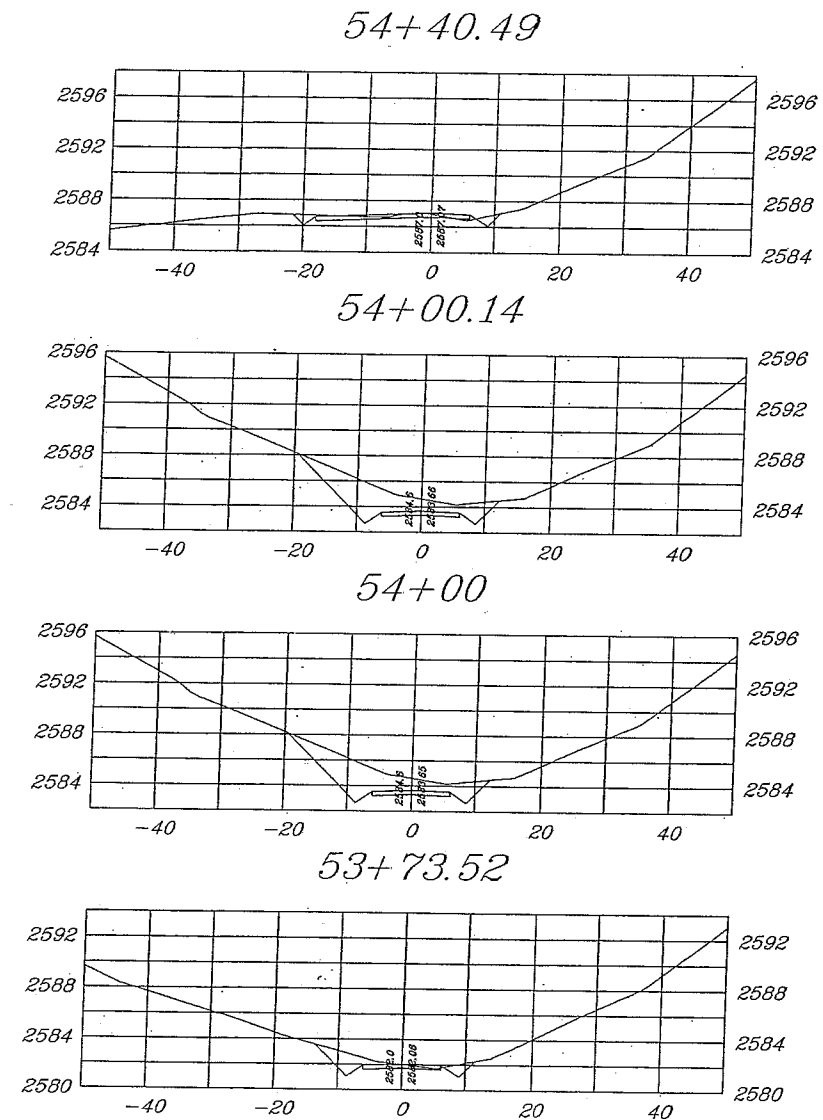
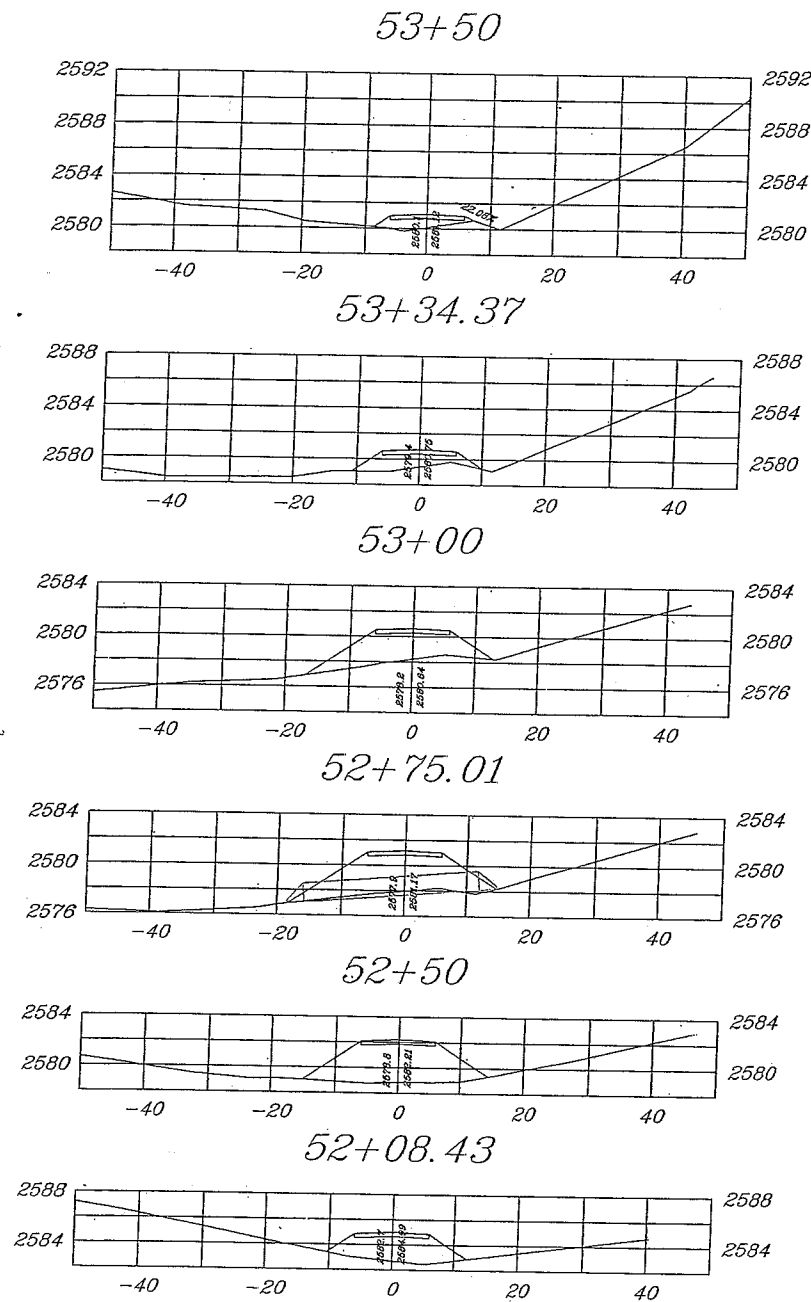
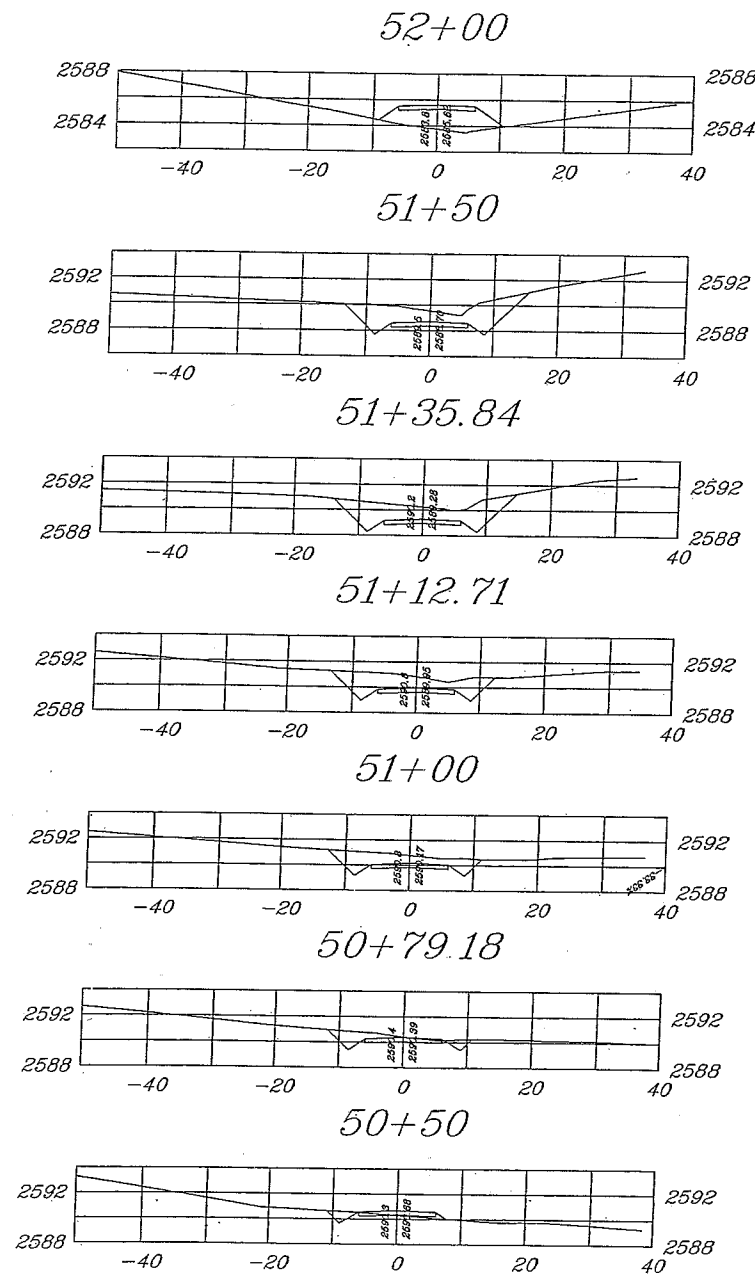
December 30, 2004

X009

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Print Name: Clinton Knutson

Signed: _____

Date: _____ License Number: 4523

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Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
52+00 - 53+73.52

Project Number: 304.305
Date: December 27, 2004
Sheets: 16 of 28

X010

PRELIMINARY NOT
FOR CONSTRUCTION

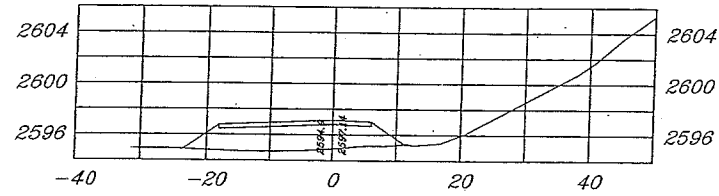
December 30, 2004

Design 1

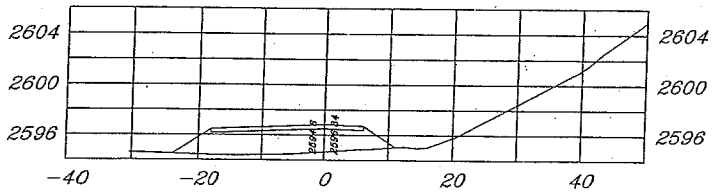
Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			

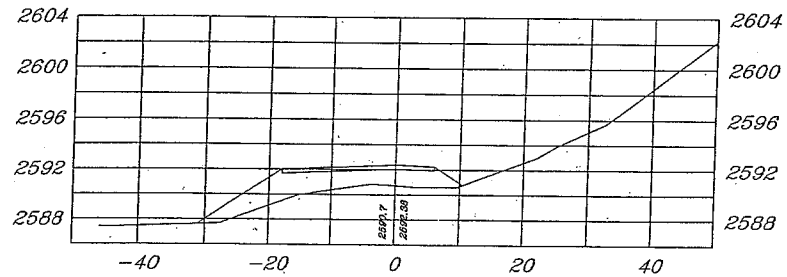
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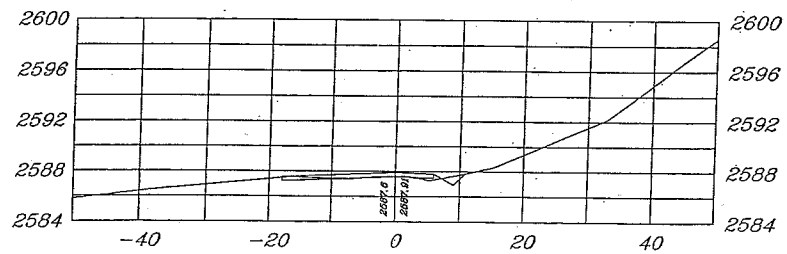
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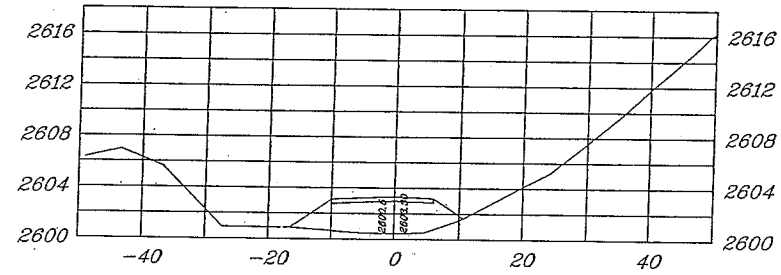
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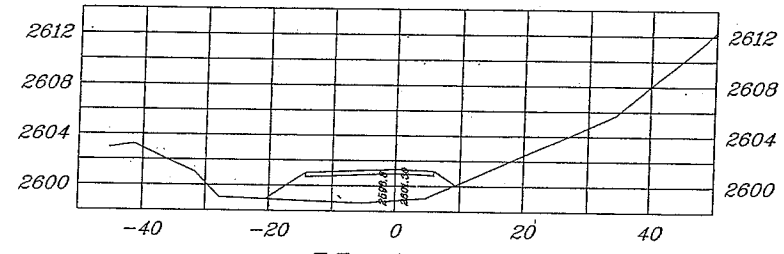
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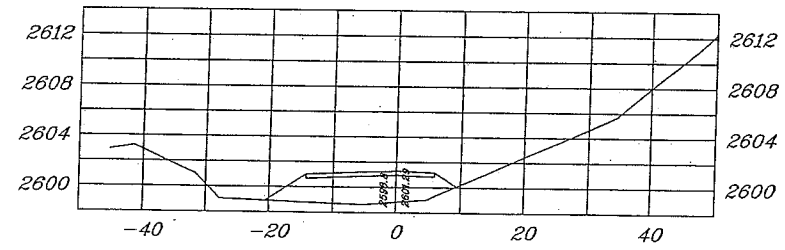
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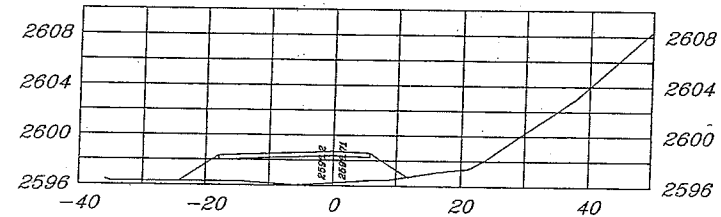
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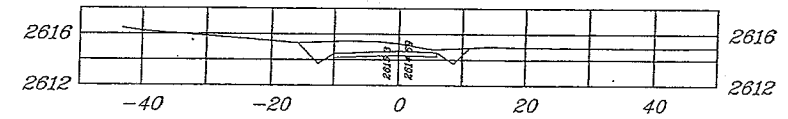
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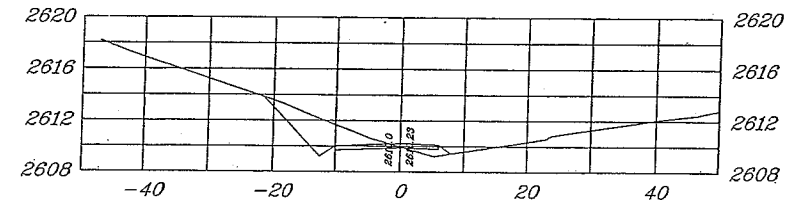
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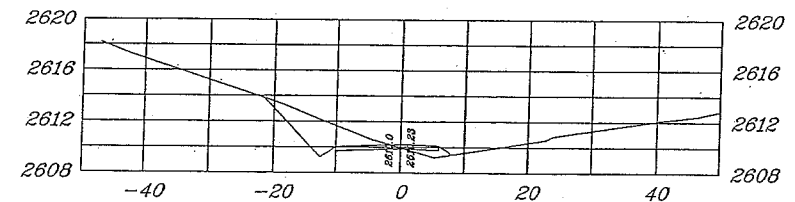
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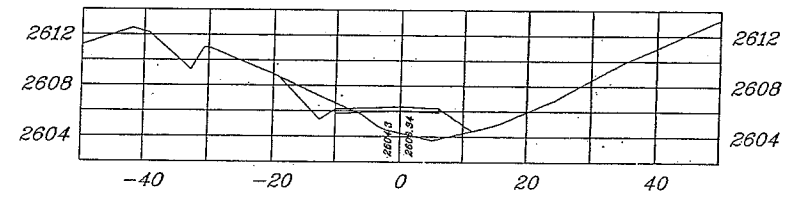
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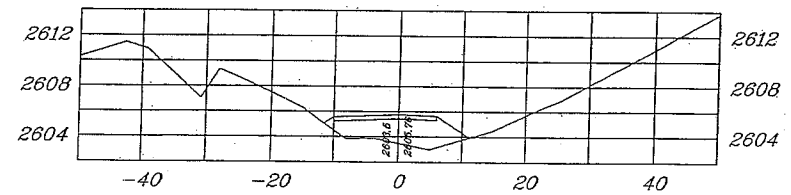
57+00



56+56.46



56+50



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Print Name: Clinton Knutson

Signed: _____

Date: _____ License Number: 4523

Ulteigengineers

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1412 Basin Avenue
Blismarck, North Dakota 58504
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Web: www.ultei.com
Drawn By: AJW
Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
55+53.32 - 56+50

Project Number: 304.308
Date: December 27, 2004
Sheets: 17 of 28

PRELIMINARY NOT
FOR CONSTRUCTION

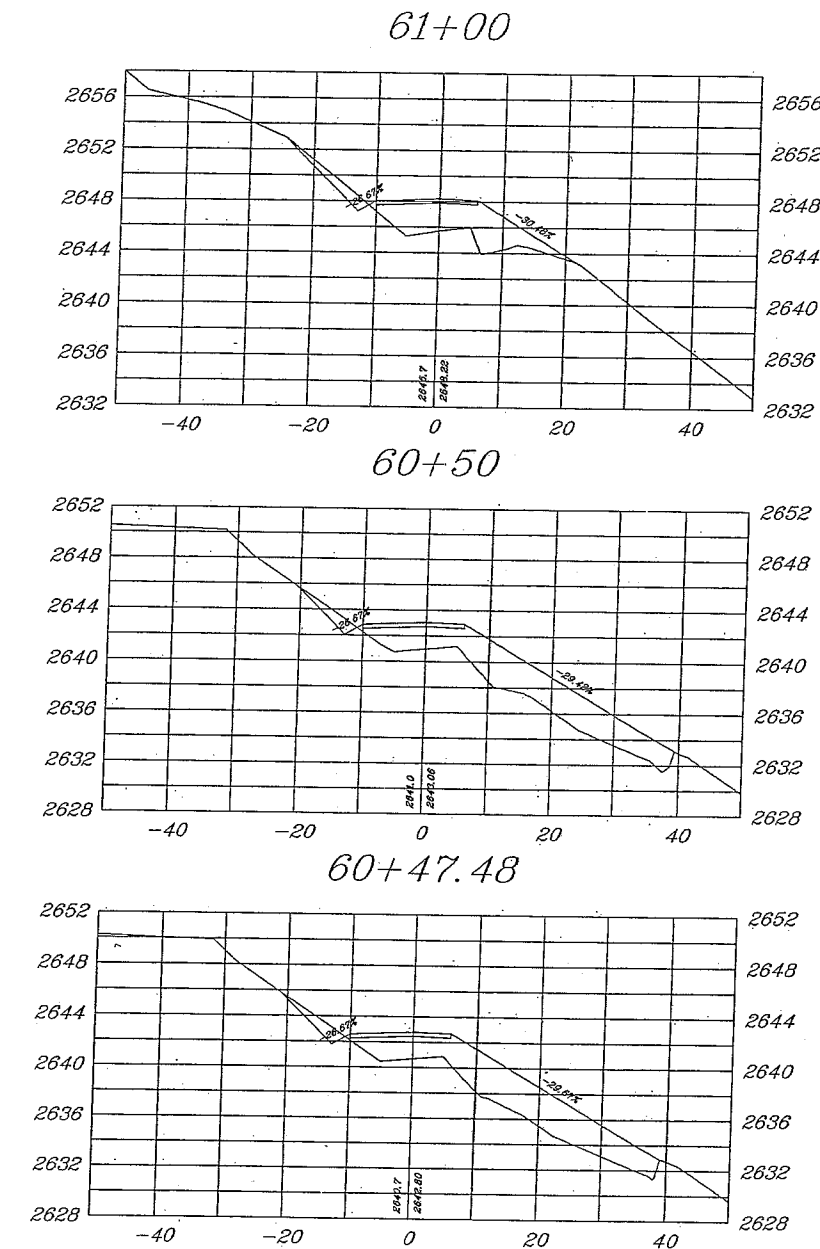
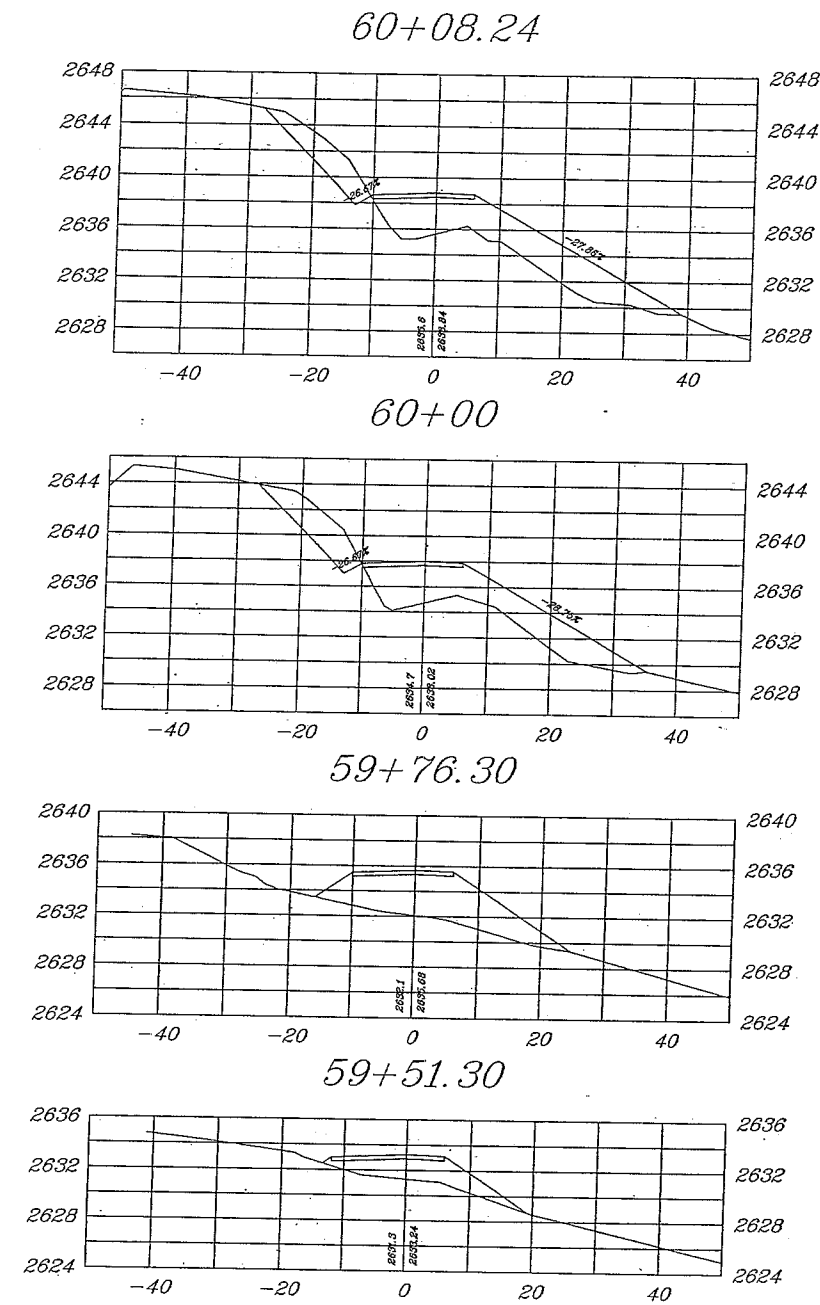
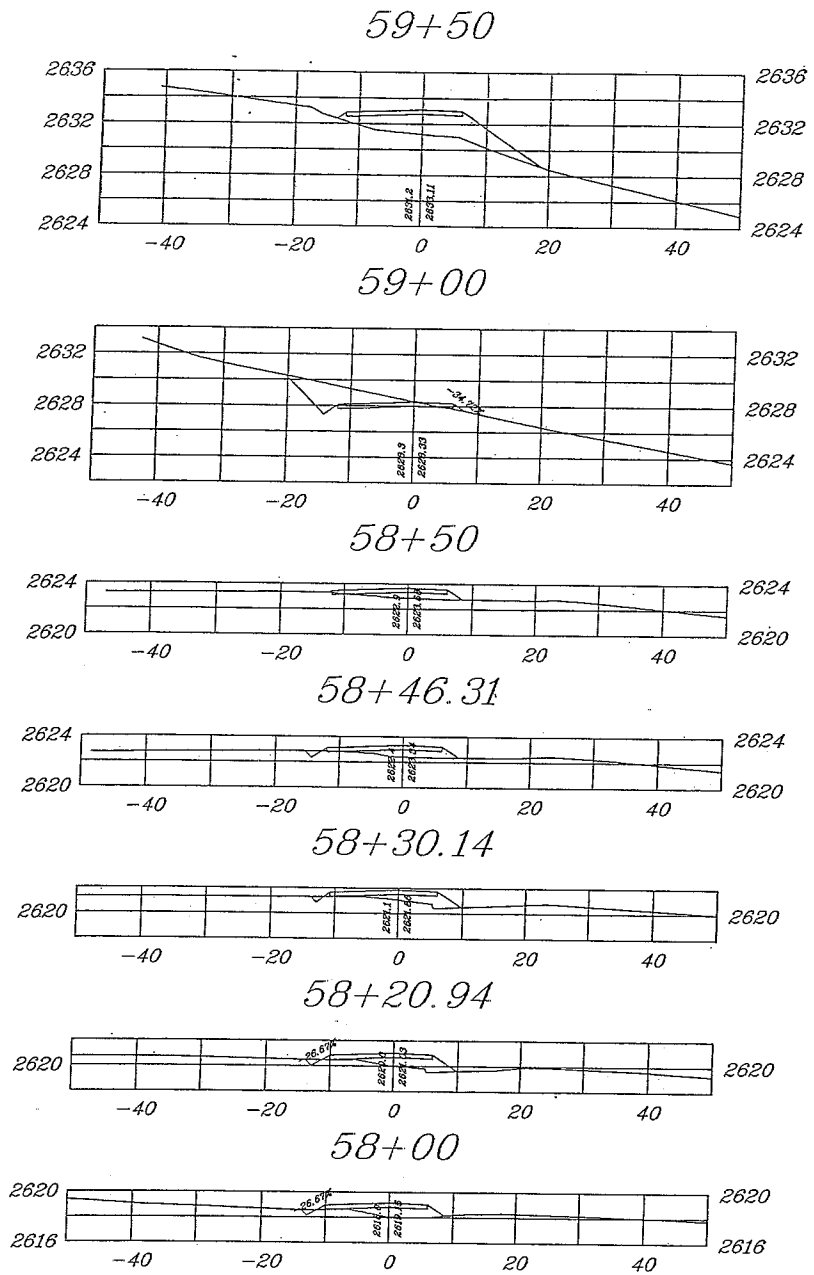
December 30, 2004

X011

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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 Bismarck, North Dakota 58504
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 Drawn By: AJW
 Checked By: CJK
 Approved By: CJK

Verizon ND4 Roughrider
 Access Road Cross-sections
 59+50 - 60+47.48

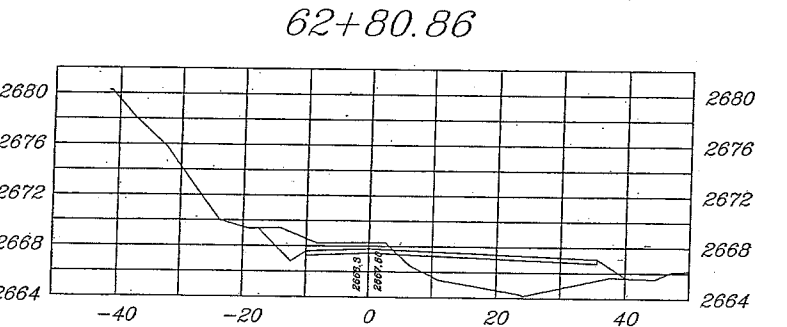
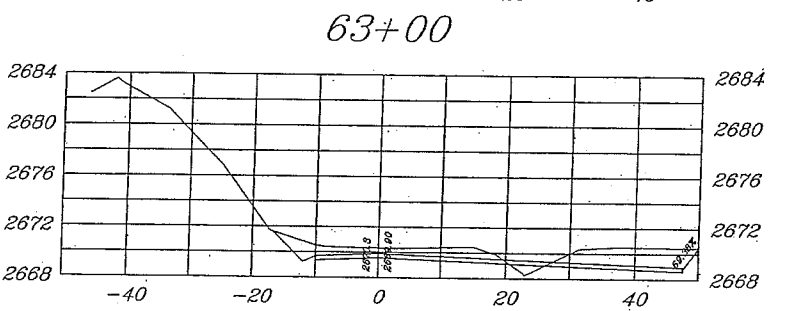
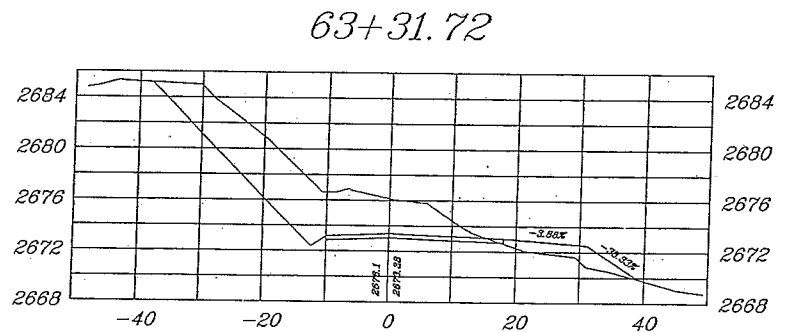
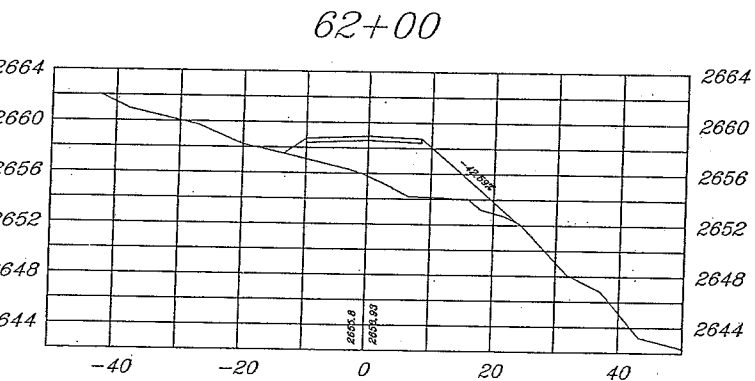
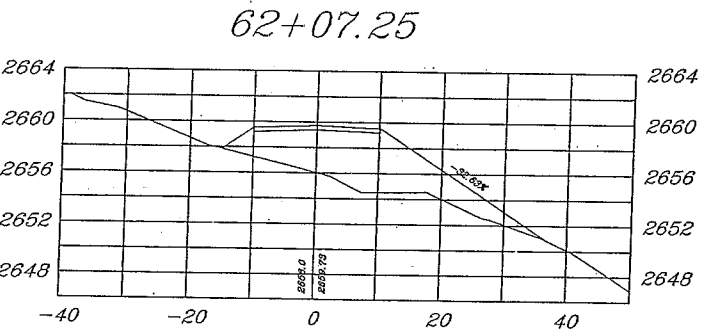
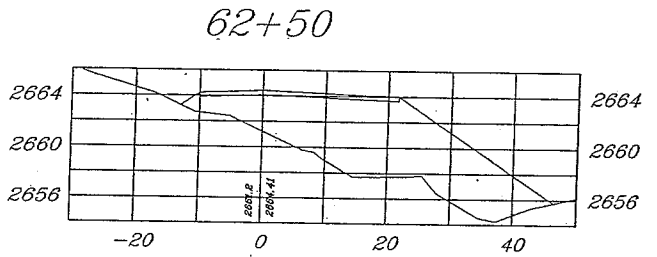
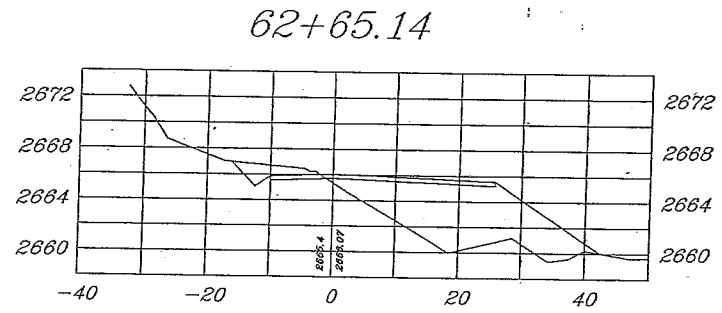
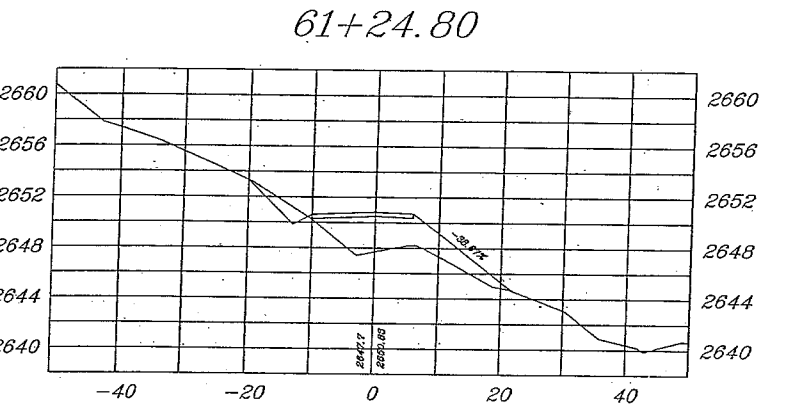
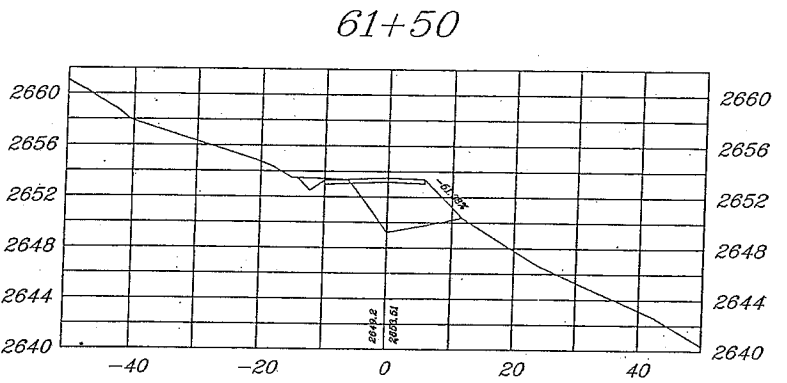
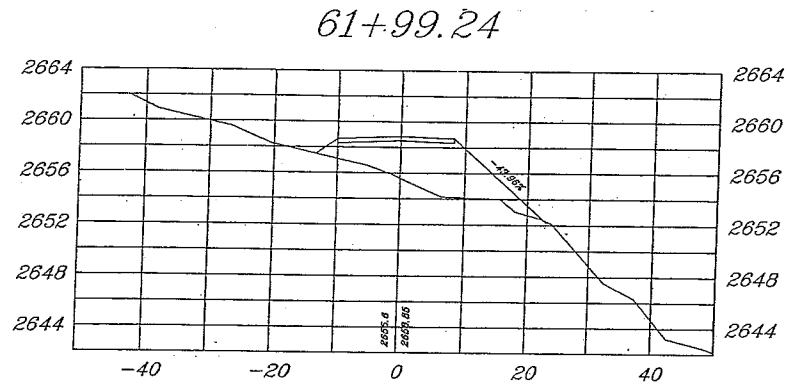
PRELIMINARY NOT
 FOR CONSTRUCTION December 30, 2004

Project Number: 304.306
 Date: December 27, 2004
 Sheets: 18 of 28 **X012**

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Date: _____ License Number: 4523

Ulteigengineers

Bismarck - Detroit Lakes - Fargo - Minneapolis - Sioux Falls
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Bismarck, North Dakota 58504
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Drawn By: AJW
Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
61+99.24 - 62+80.86

Project Number: 304.306
Date: December 27, 2004
Sheets: 19 of 28

PRELIMINARY NOT
FOR CONSTRUCTION December 30, 2004

X013

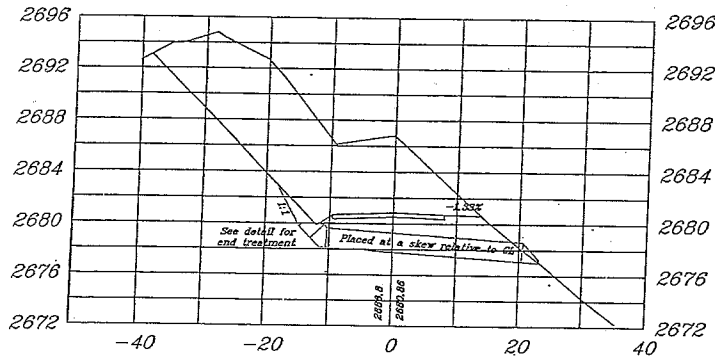
Design 1

Eden Prairie, MN

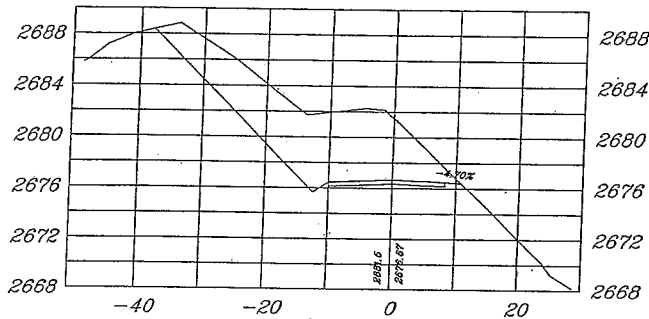
Revision	Date	Number	By
A			

PLAN NOTES OR GENERAL NOTES

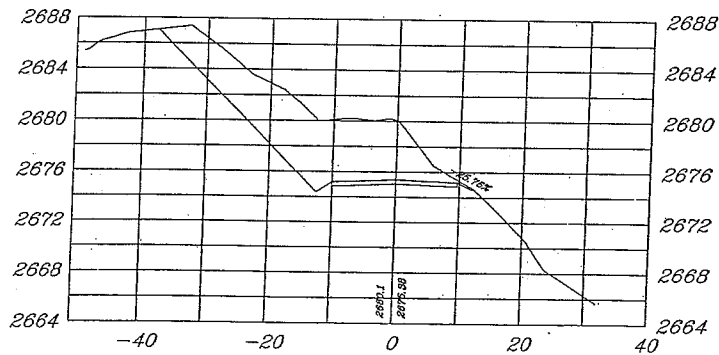
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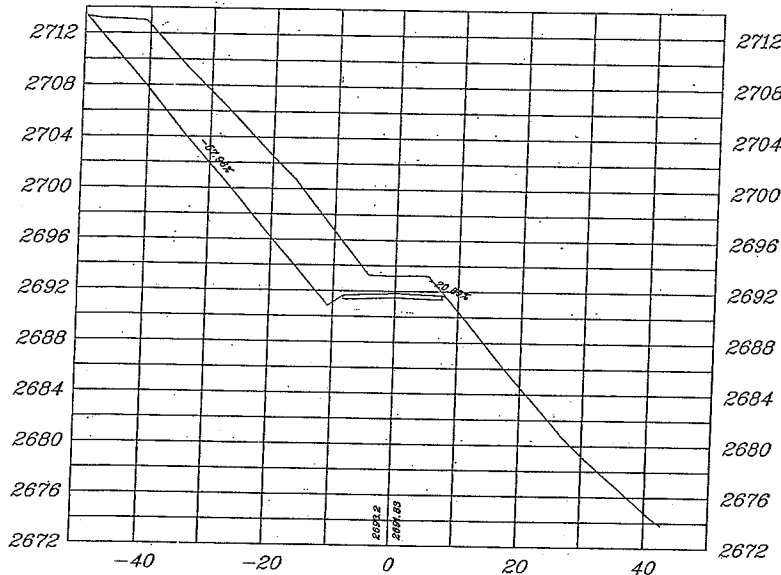
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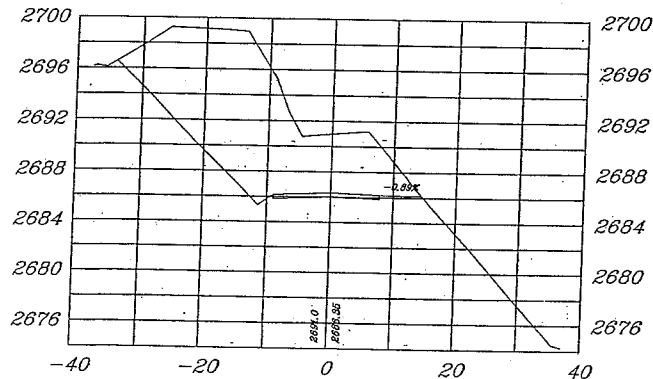
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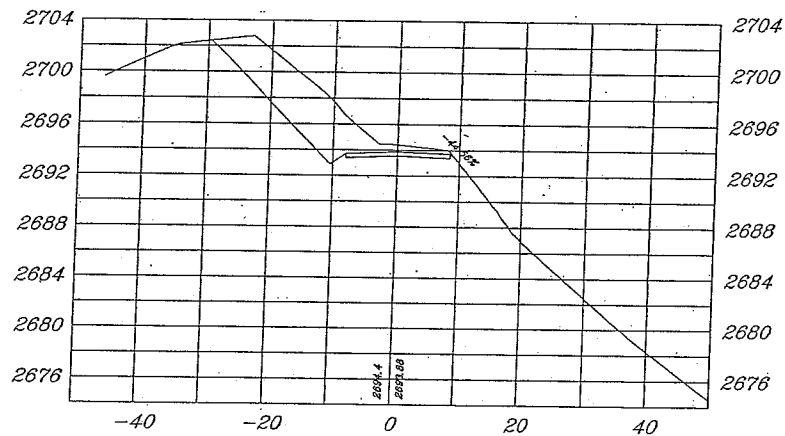
65+00



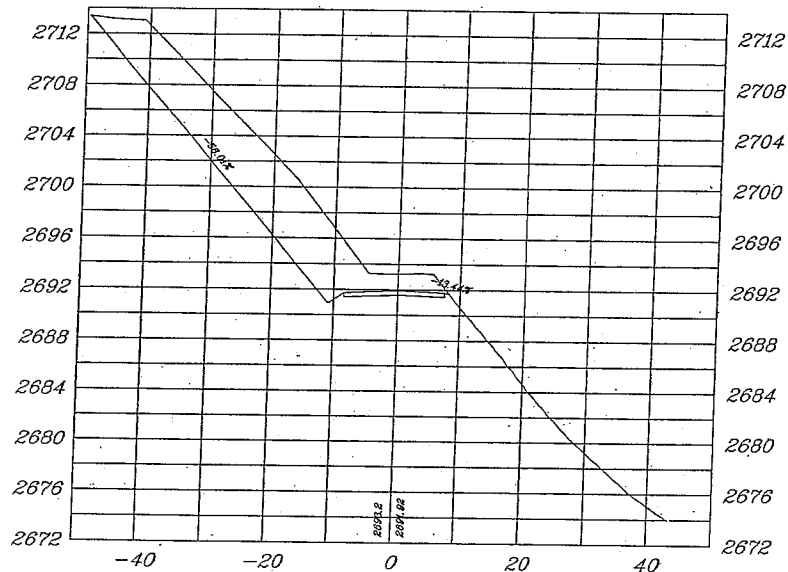
64+50



65+18.69



65+00.84



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Signed:

Date: License Number: 4523

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Verizon ND4 Roughrider
Access Road Cross-sections
64+00 - 65+00.84

Project Number: 304.308
Date: December 27, 2004
Sheets: 20 of 28

X014

PRELIMINARY NOT
FOR CONSTRUCTION

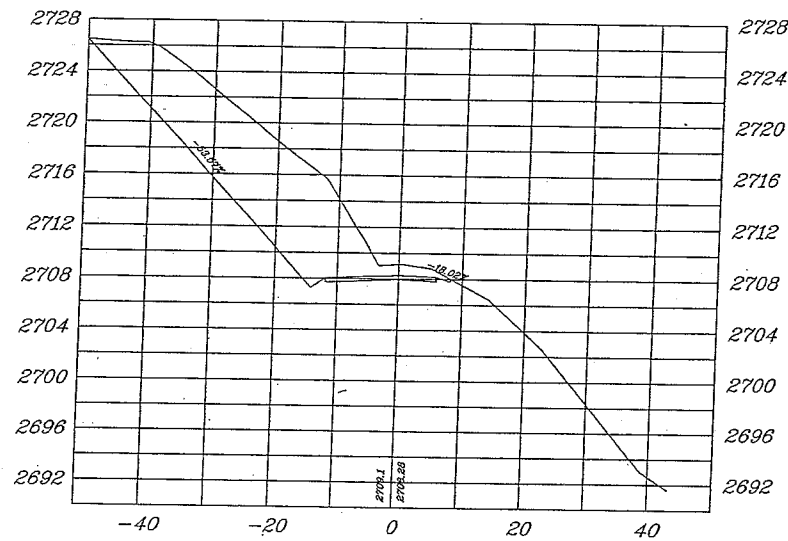
December 30, 2004

Design 1

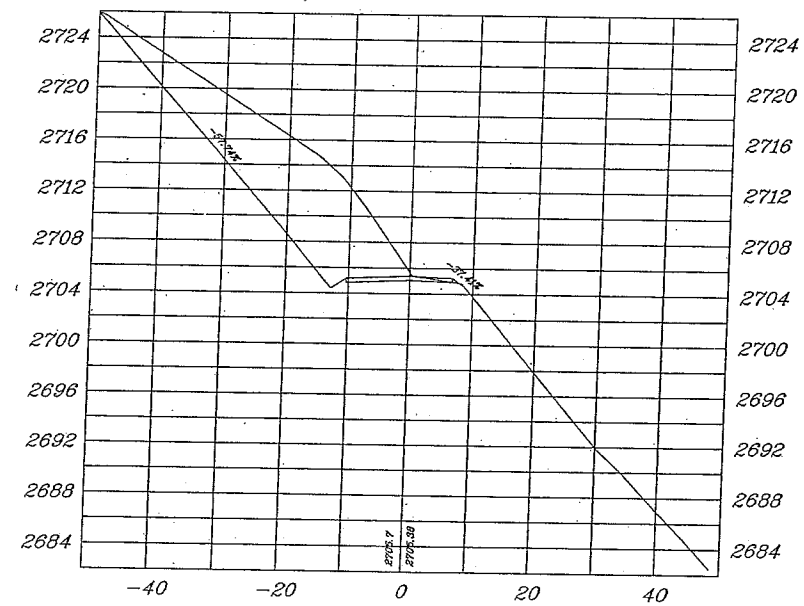
Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			

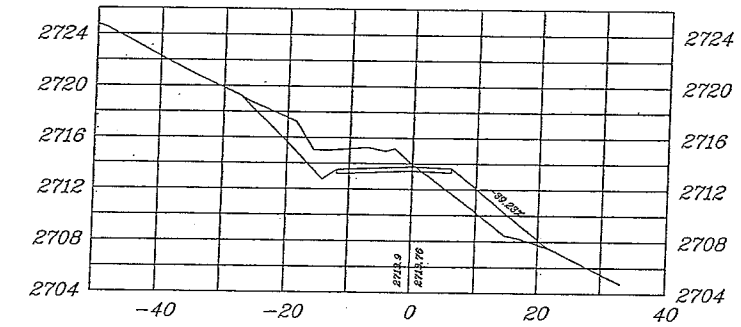
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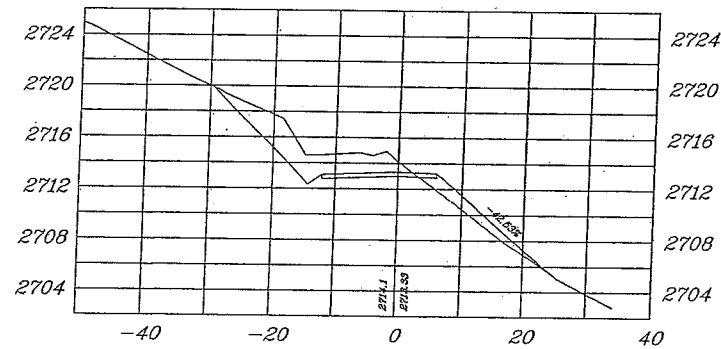
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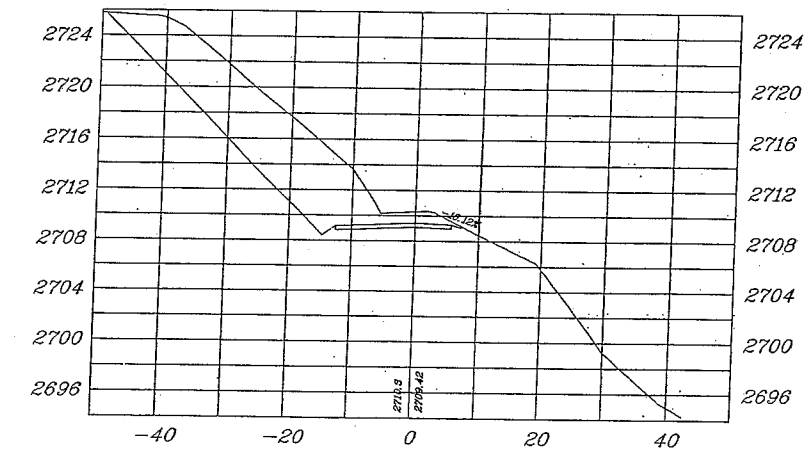
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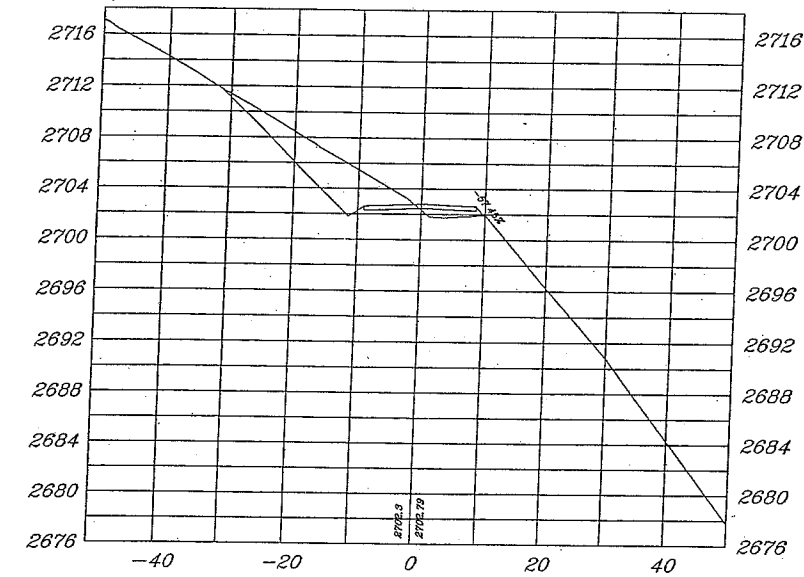
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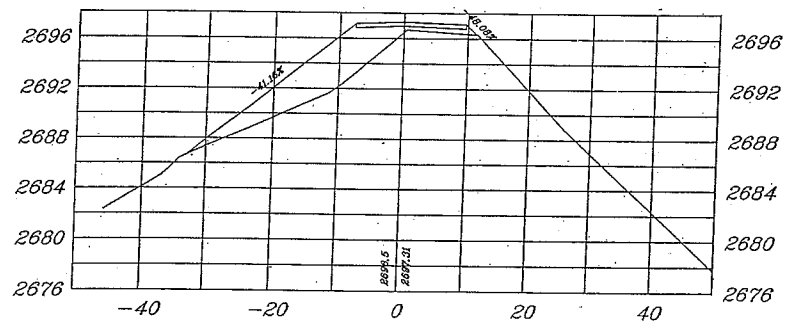
66+60.45



66+00



65+50



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota.

Print Name: Clinton Knutson

Signed: _____

Date: _____ License Number: 4523

Ulteigengineers

Bismarck - Detroit Lakes - Fargo - Minneapolis - Sioux Falls
1412 Basin Avenue
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Phone: 701.258.6507 Fax: 701.224.1163
Web: www.ultei.com
Drawn By: AJW
Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
66+00 - 66+60.45

Project Number: 304.306
Date: December 27, 2004
Sheets: 21 of 28

X015

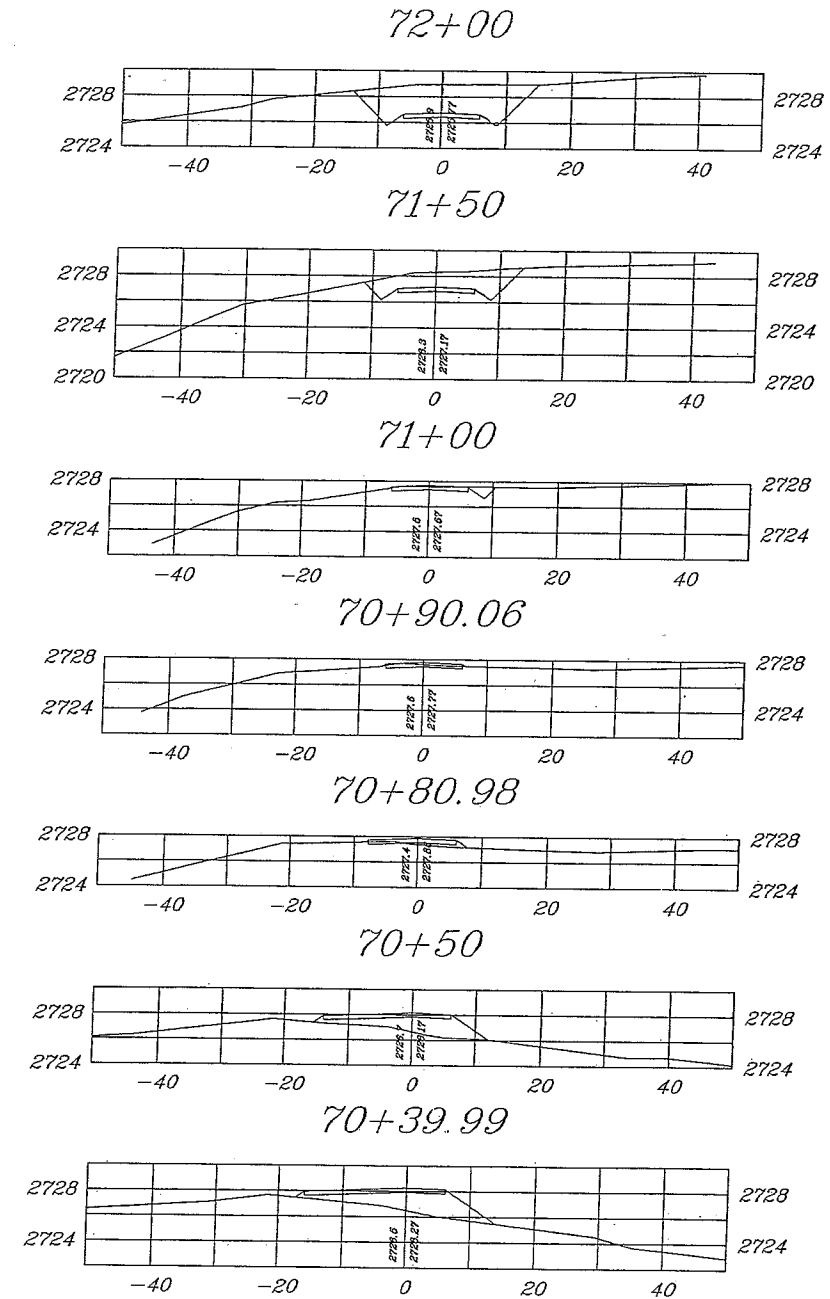
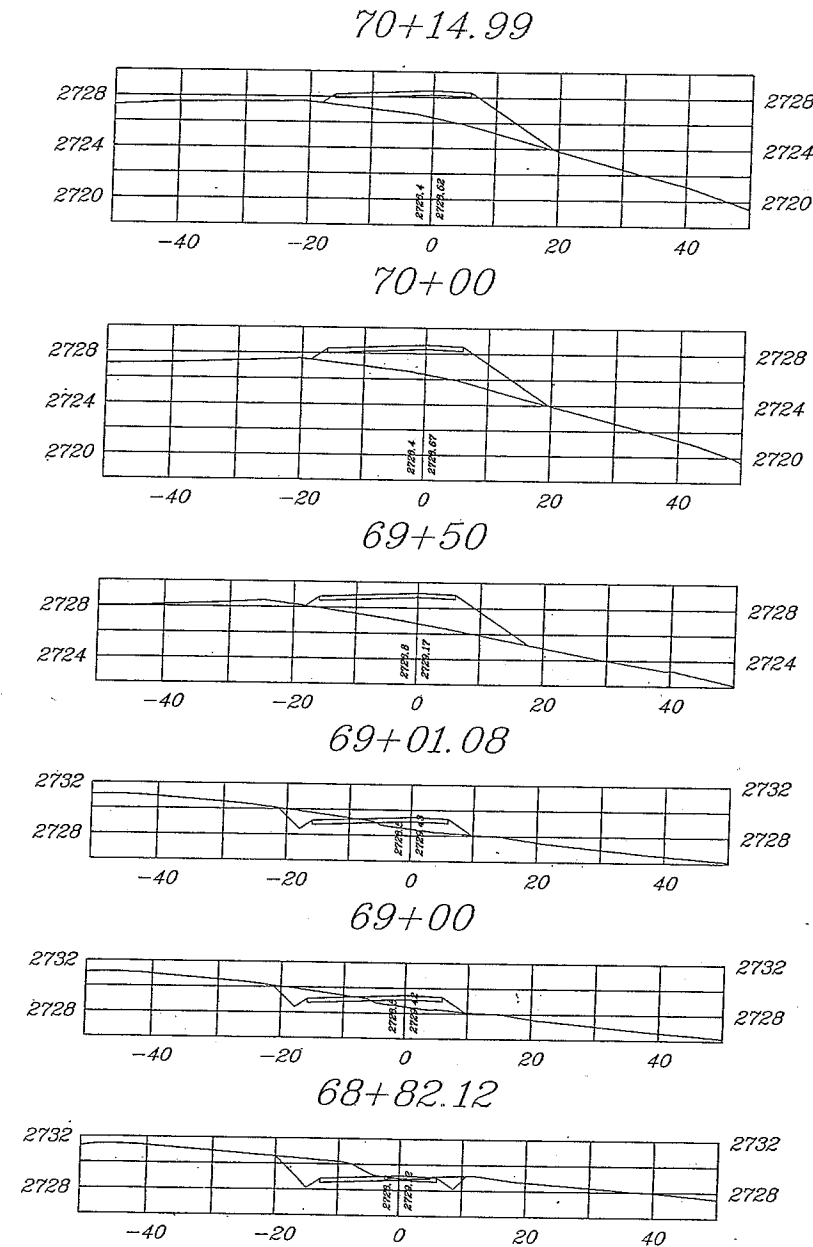
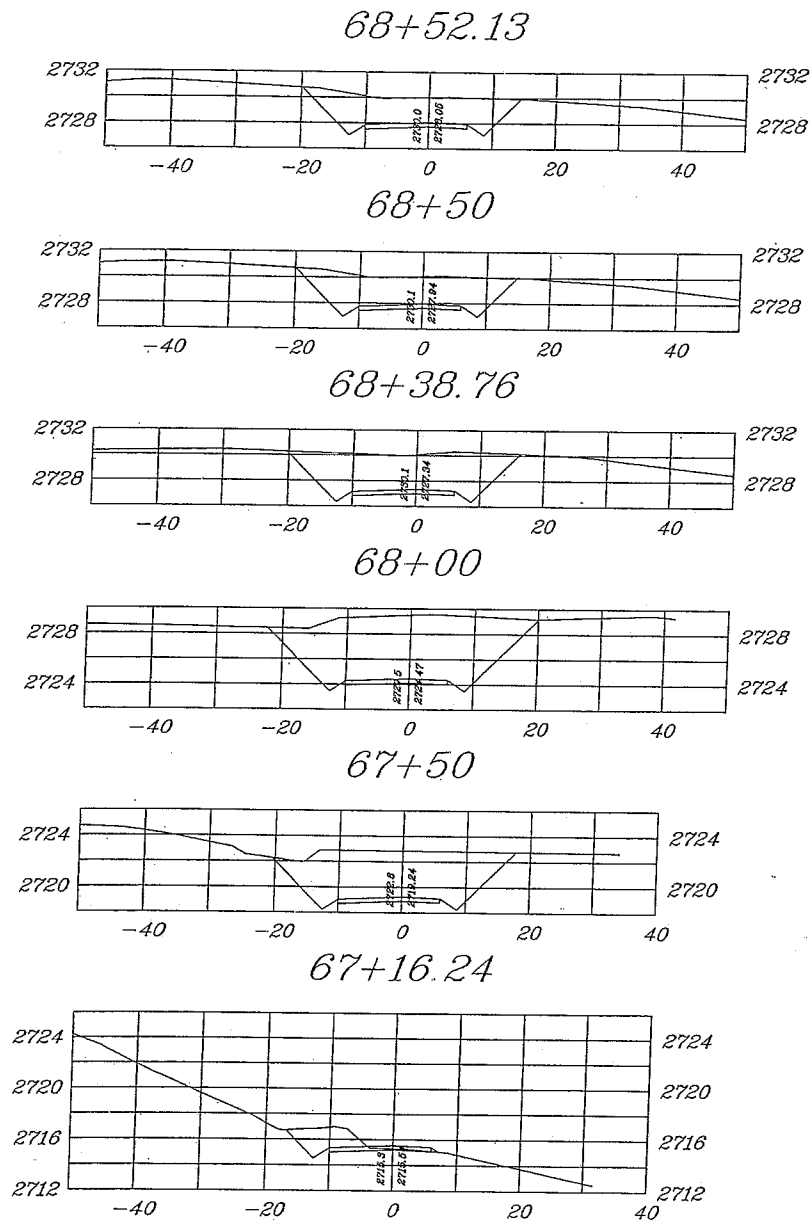
PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Verizon ND4 Roughrider
Access Road Cross-sections
68+52.13 - 70+39.99

Project Number: 304.306
Date: December 27, 2004
Sheets: 22 of 28

X016

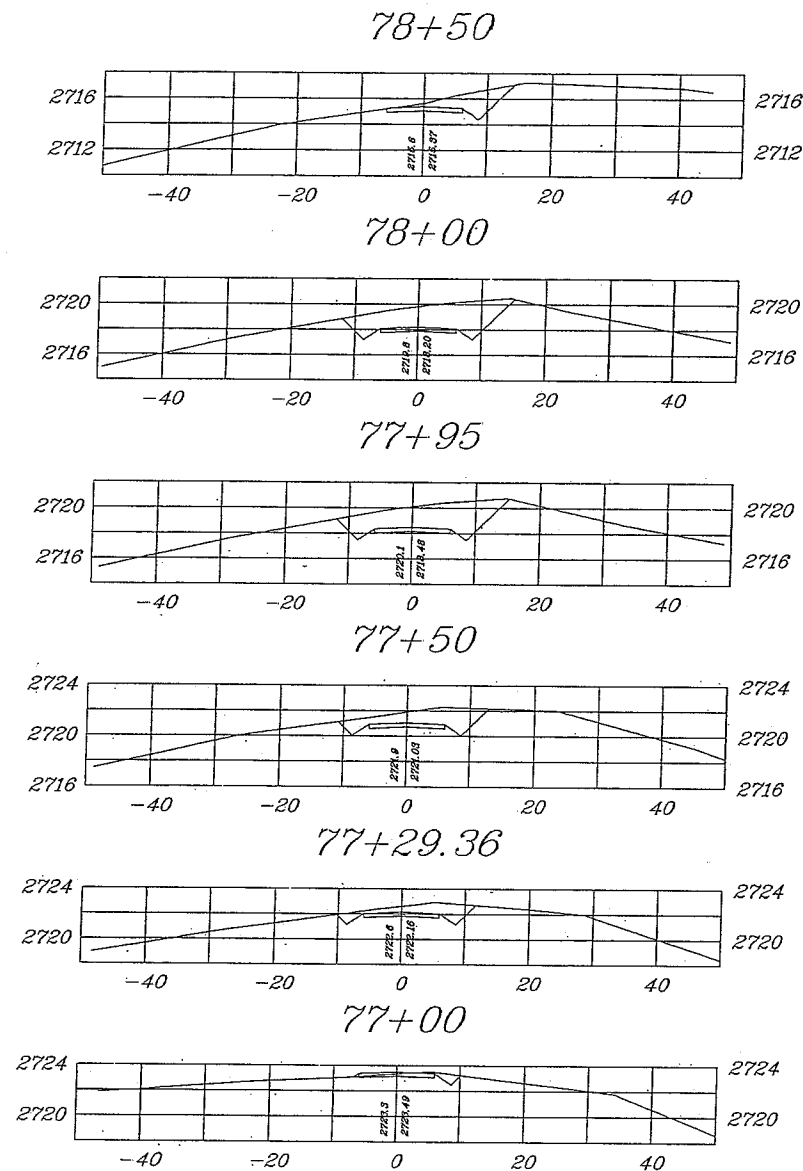
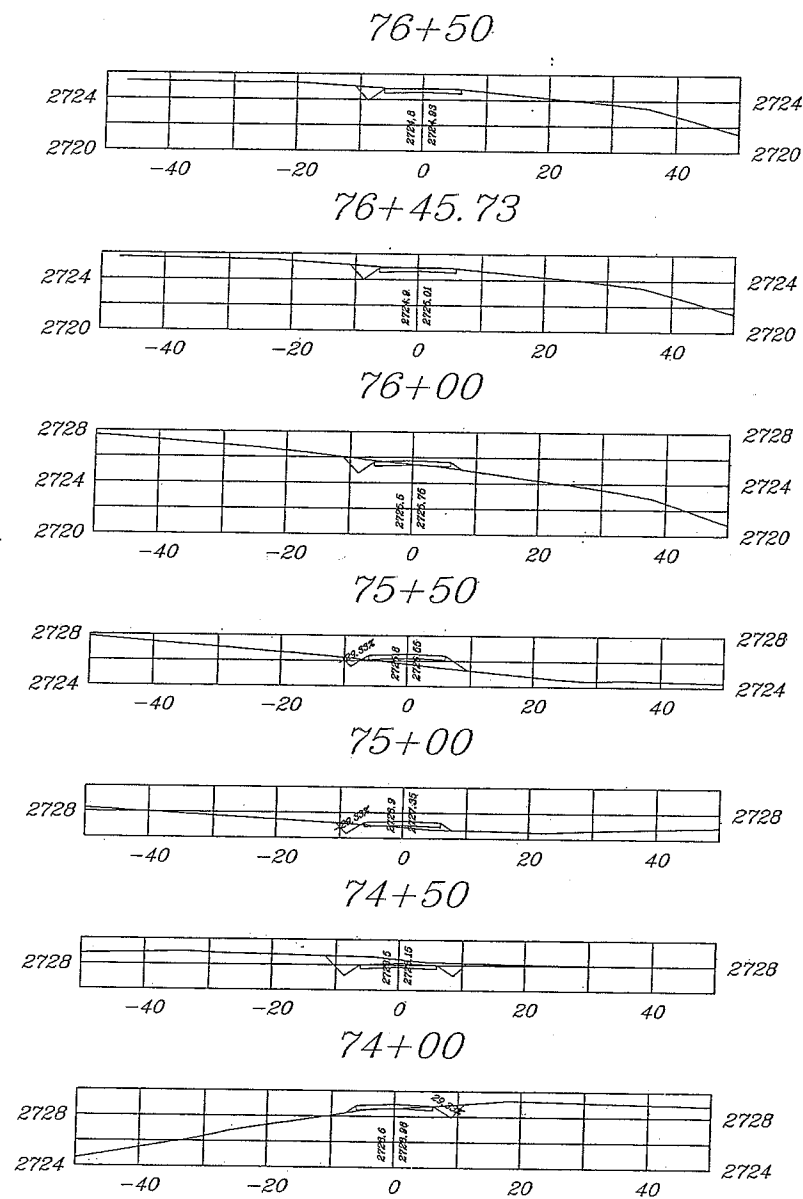
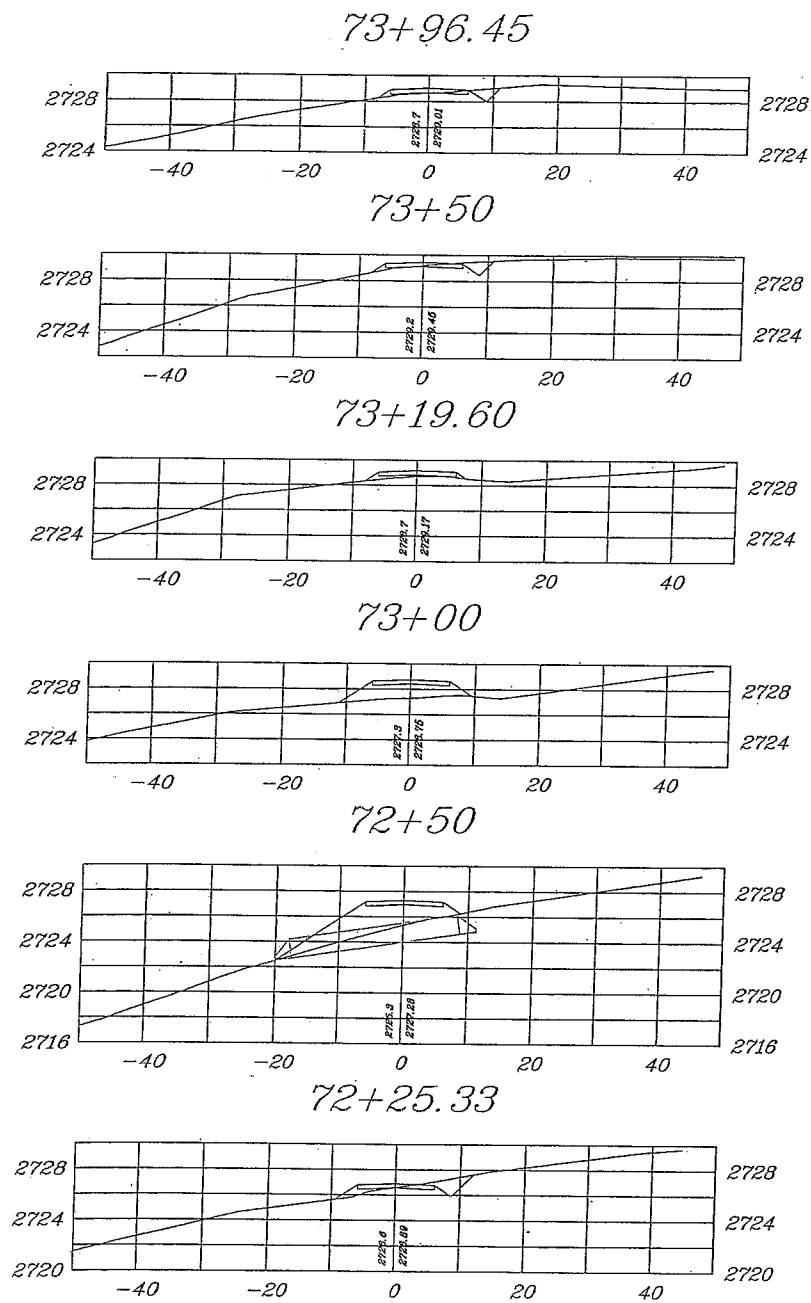
PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Date: _____ License Number: 4523

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1412 Basin Avenue
Bismarck, North Dakota 58504
Phone: 701.258.6507 Fax: 701.224.1163
Web: www.ultieg.com
Drawn By: AJW
Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
73+96.45 - 77+00

Project Number: 304.305
Date: December 27, 2004
Sheets: 23 of 28

X017

PRELIMINARY NOT
FOR CONSTRUCTION

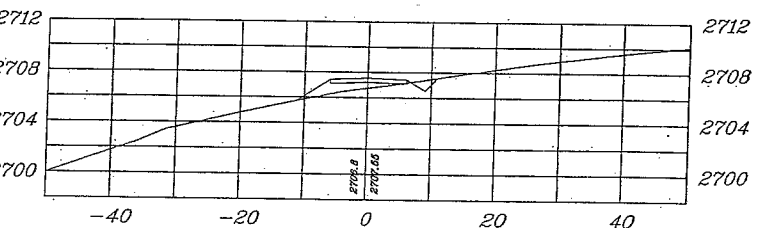
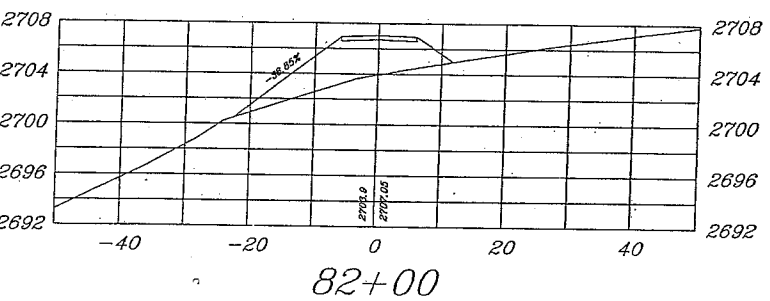
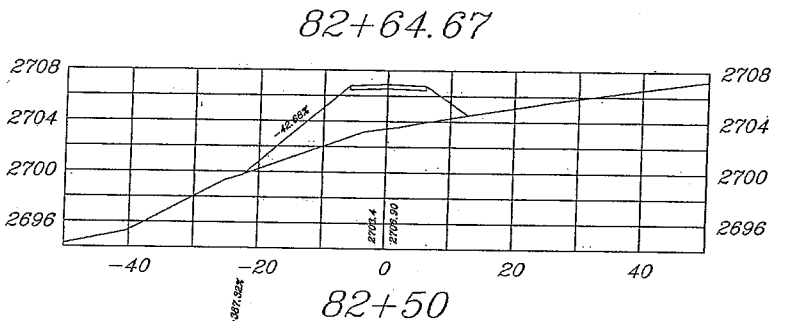
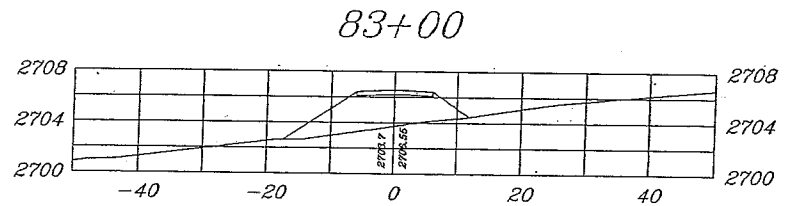
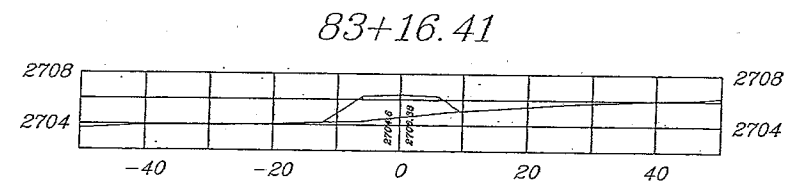
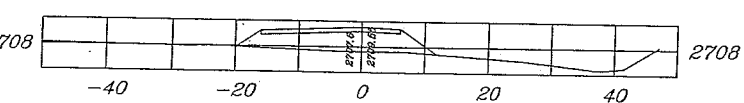
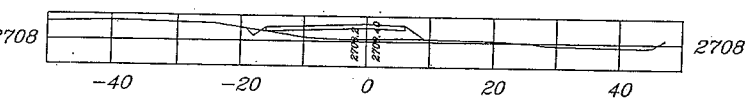
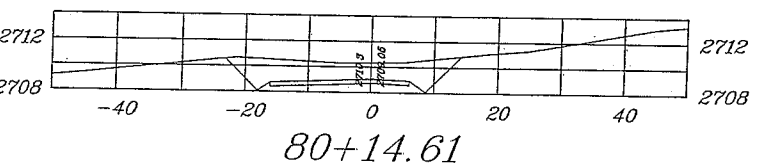
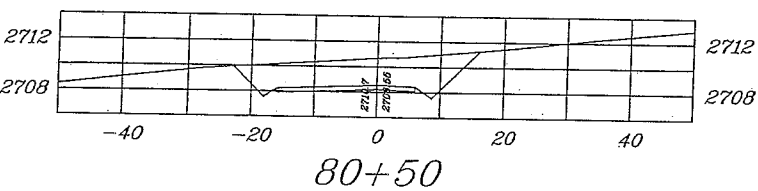
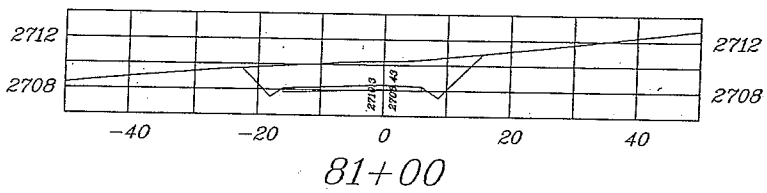
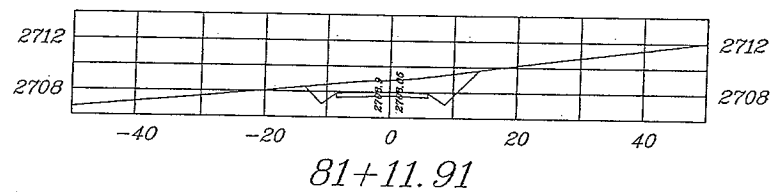
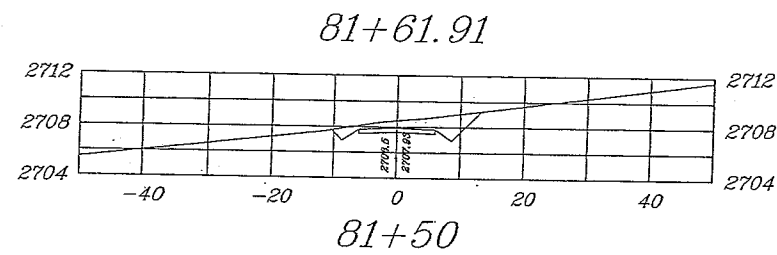
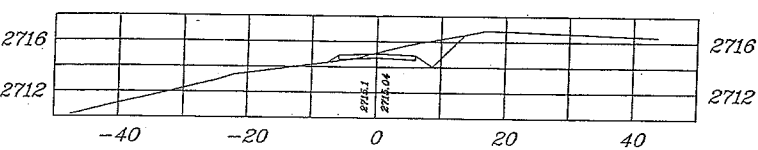
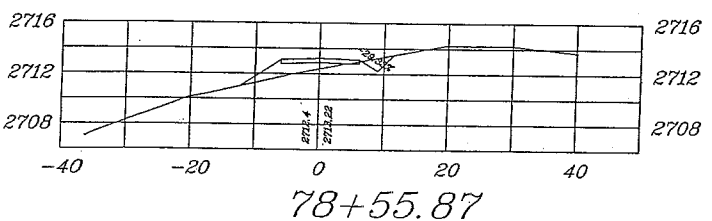
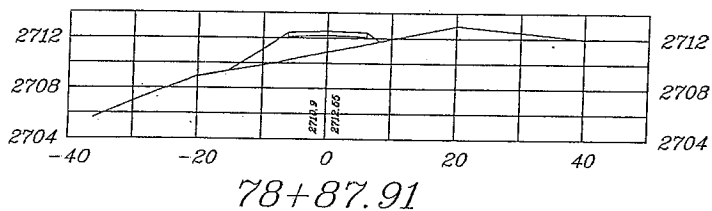
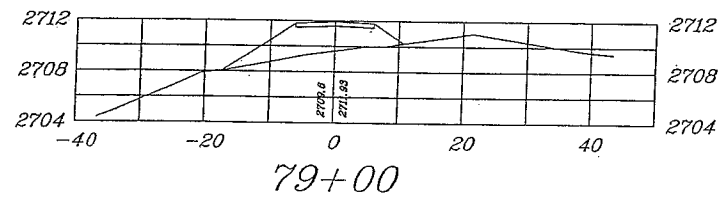
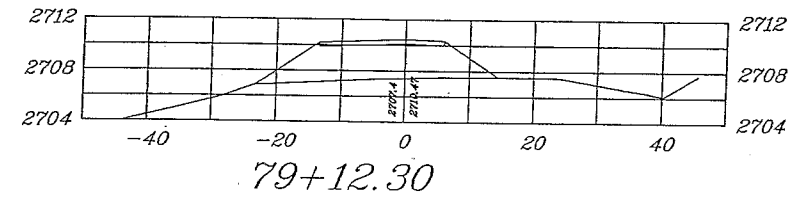
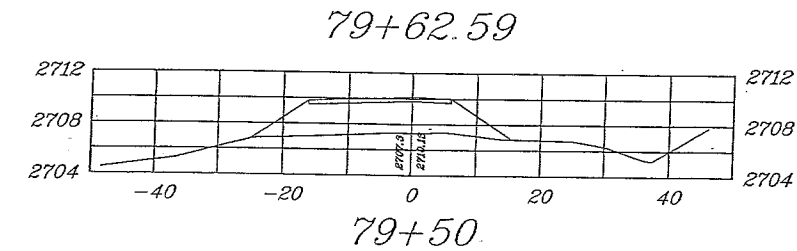
December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			

PLAN NOTES OR GENERAL NOTES



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Print Name: Clinton Knulson

Signed: _____

Date: _____ License Number: 4523

Ulteigengineers

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Bismarck, North Dakota 58504
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Web: www.ultei.com
Drawn By: AJW
Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
79+62.59 - 82+00

Project Number: 304.306
Date: December 27, 2004
Sheets: 24 of 28

X018

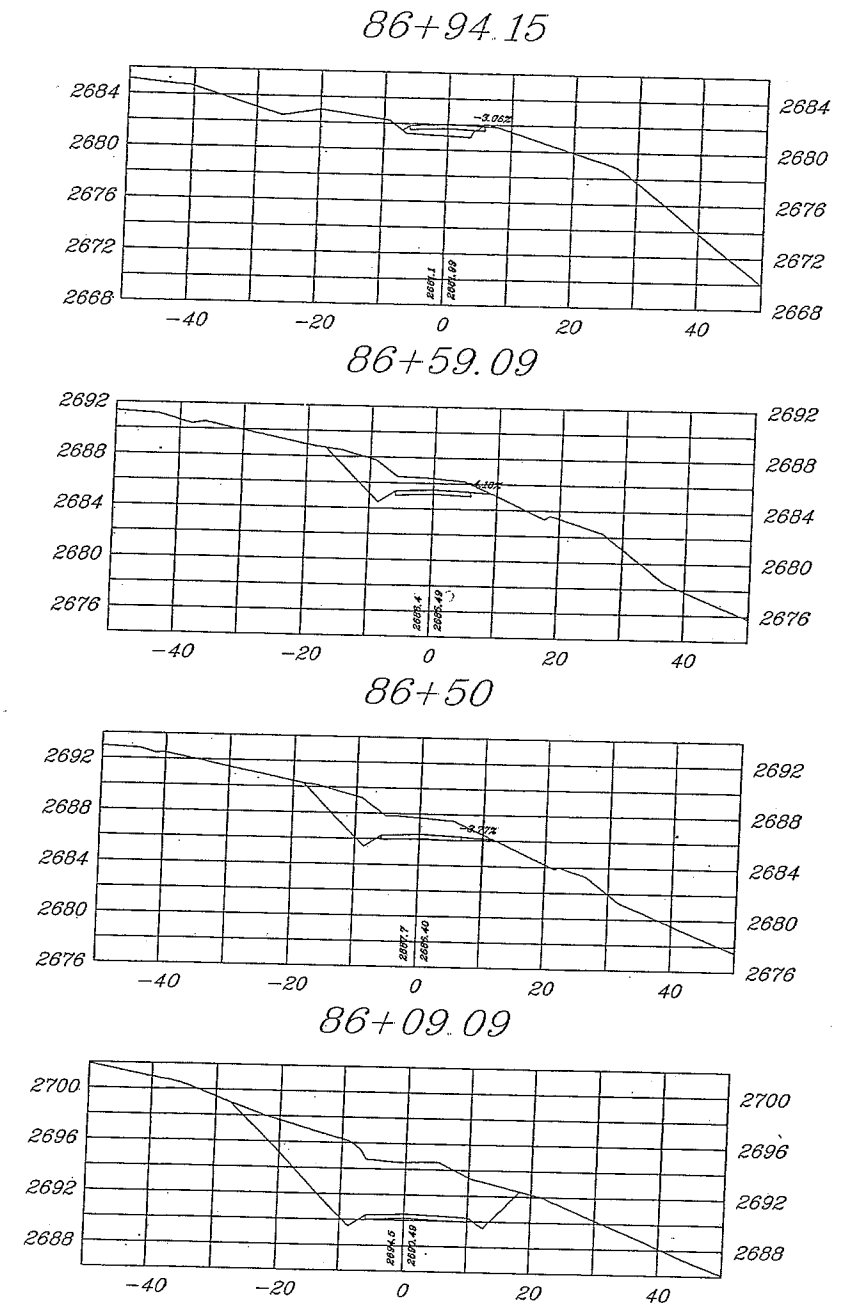
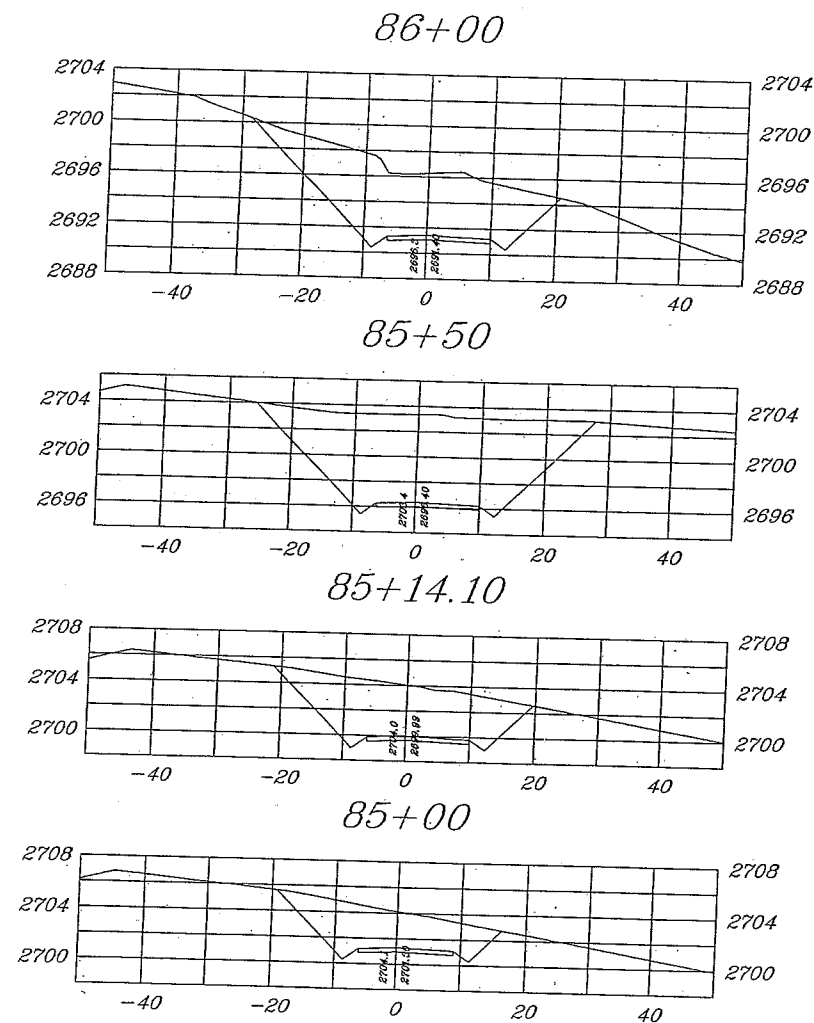
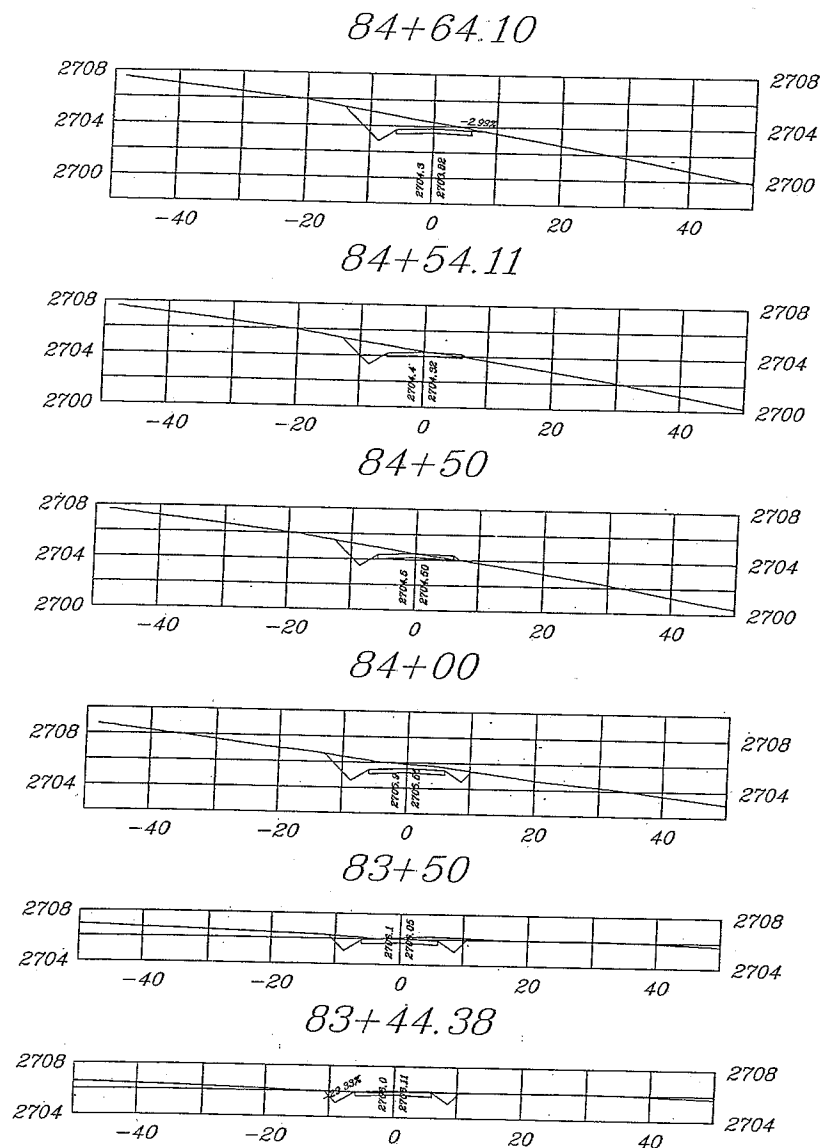
PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Phone: 701.253.8507 Fax: 701.224.1163
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Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
84+64.10 - 88+09.09

Project Number: 304.306
Date: December 27, 2004

PRELIMINARY NOT
FOR CONSTRUCTION December 30, 2004

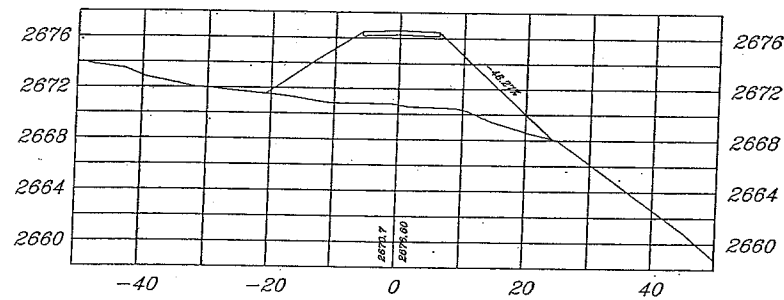
Design 1

Eden Prairie, MN

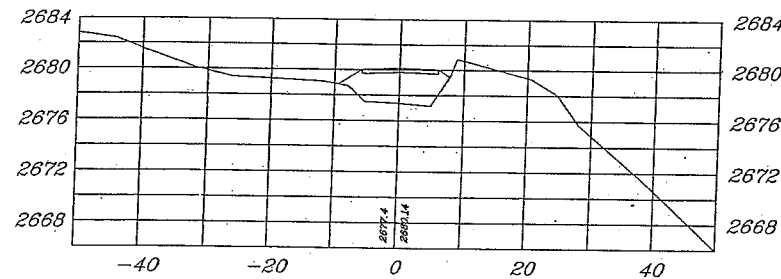
Revision	Date	Number	By
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PLAN NOTES OR GENERAL NOTES

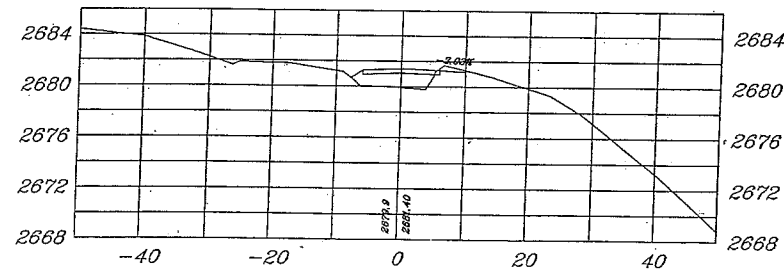
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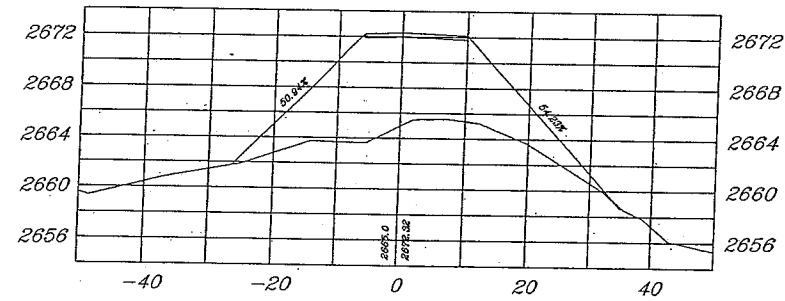
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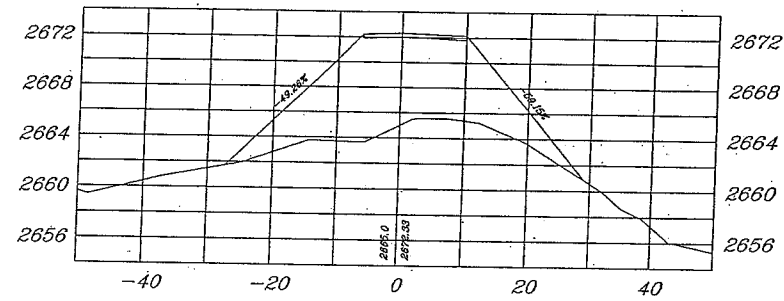
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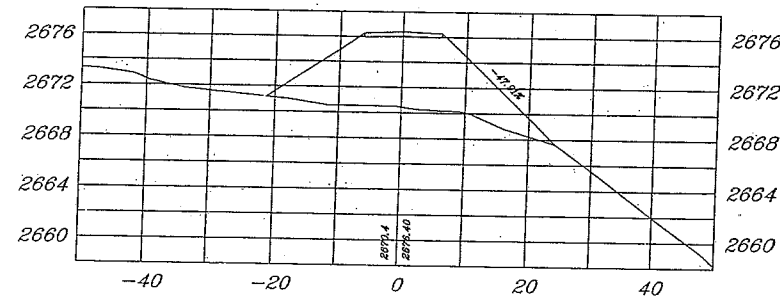
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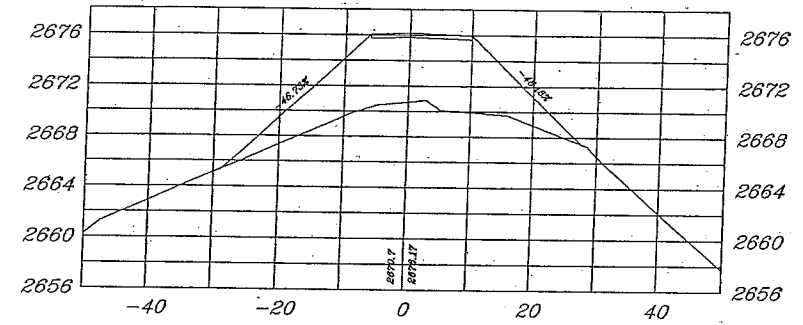
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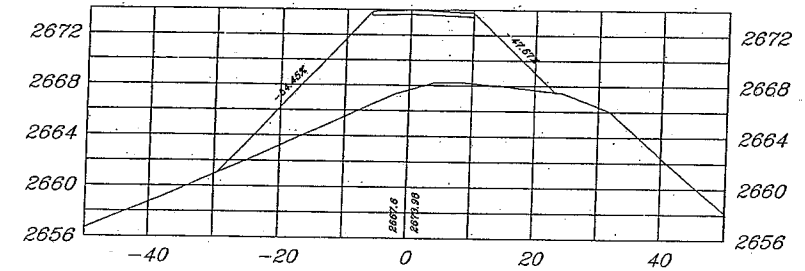
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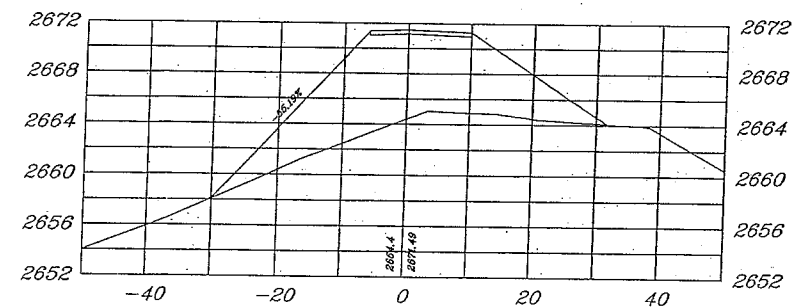
89+23



89+00



88+50



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Print Name: Clinton Knutson

Signed: _____

Date: _____ License Number: 4523

Ulteigengineers

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1412 Basin Avenue
Bismarck, North Dakota 58504
Phone: 701.258.6507 Fax: 701.224.1183
Web: www.ultei.com
Drawn By: AJW
Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
87+48.07 - 88+50

PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

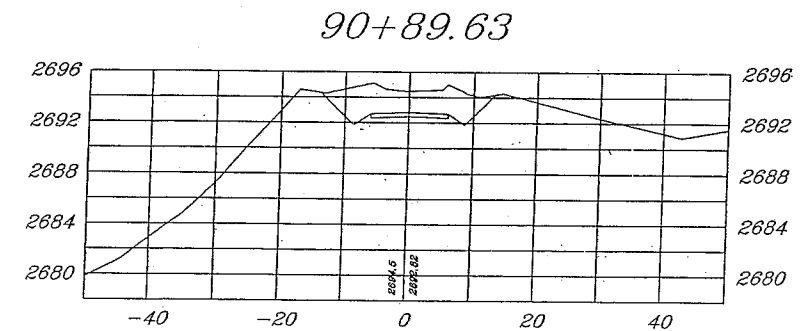
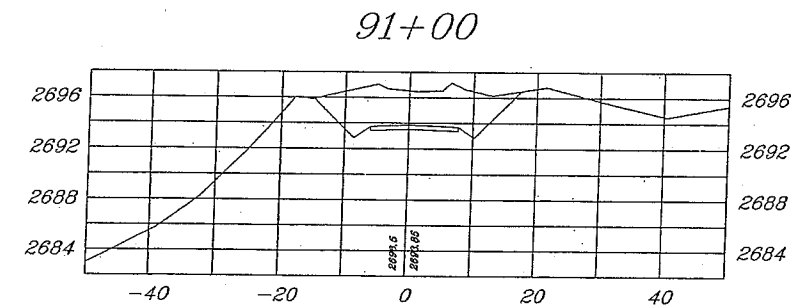
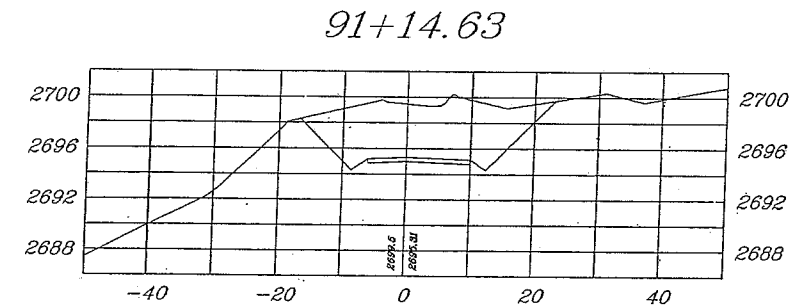
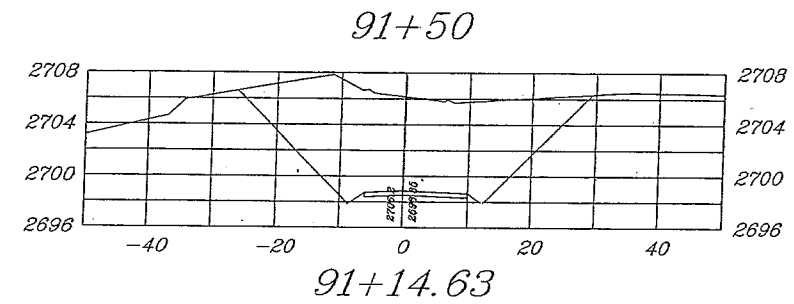
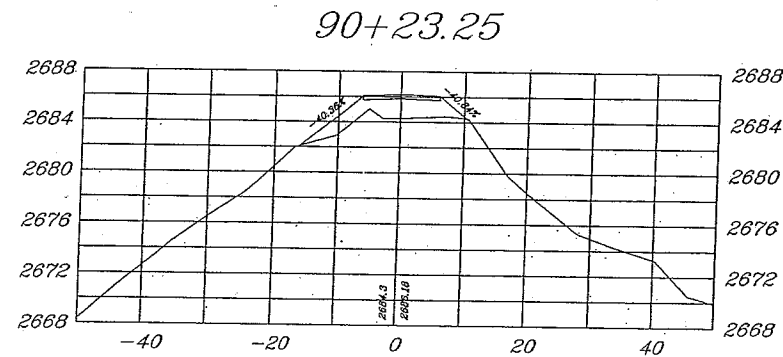
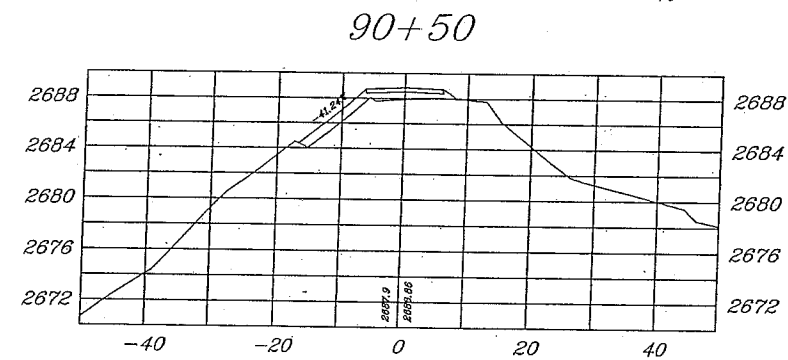
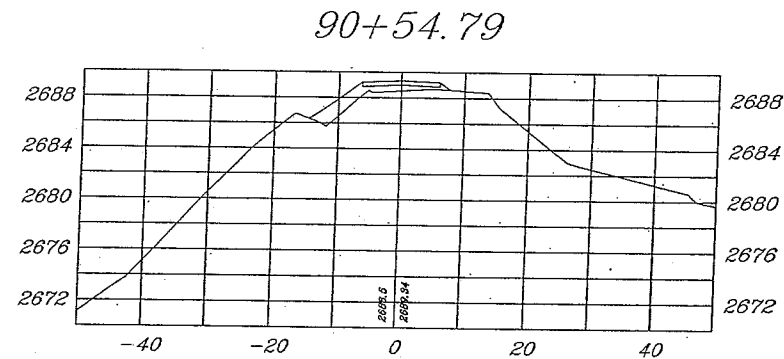
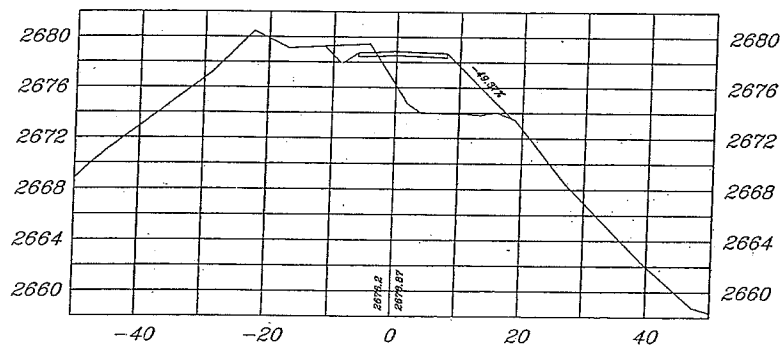
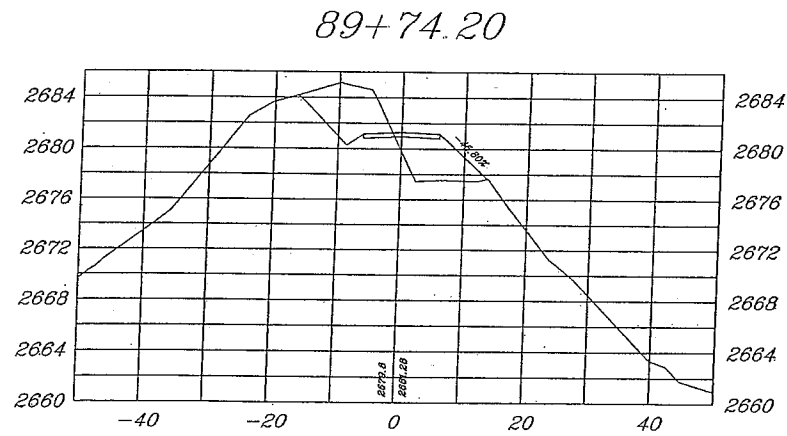
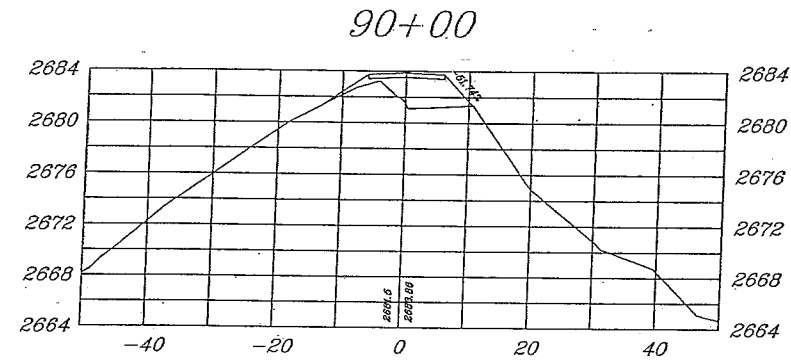
Project Number: 304.305
Date: December 27, 2004
Sheets: 26 of 28

X020

Design 1

Eden Prairie, MN

Revision	Date	Number	By
1			
PLAN NOTES OR GENERAL NOTES			



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Date: _____ License Number: 4523

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Bismarck, North Dakota 58504
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Web: www.ultieg.com
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Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
90+00 - 90+89.63

PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

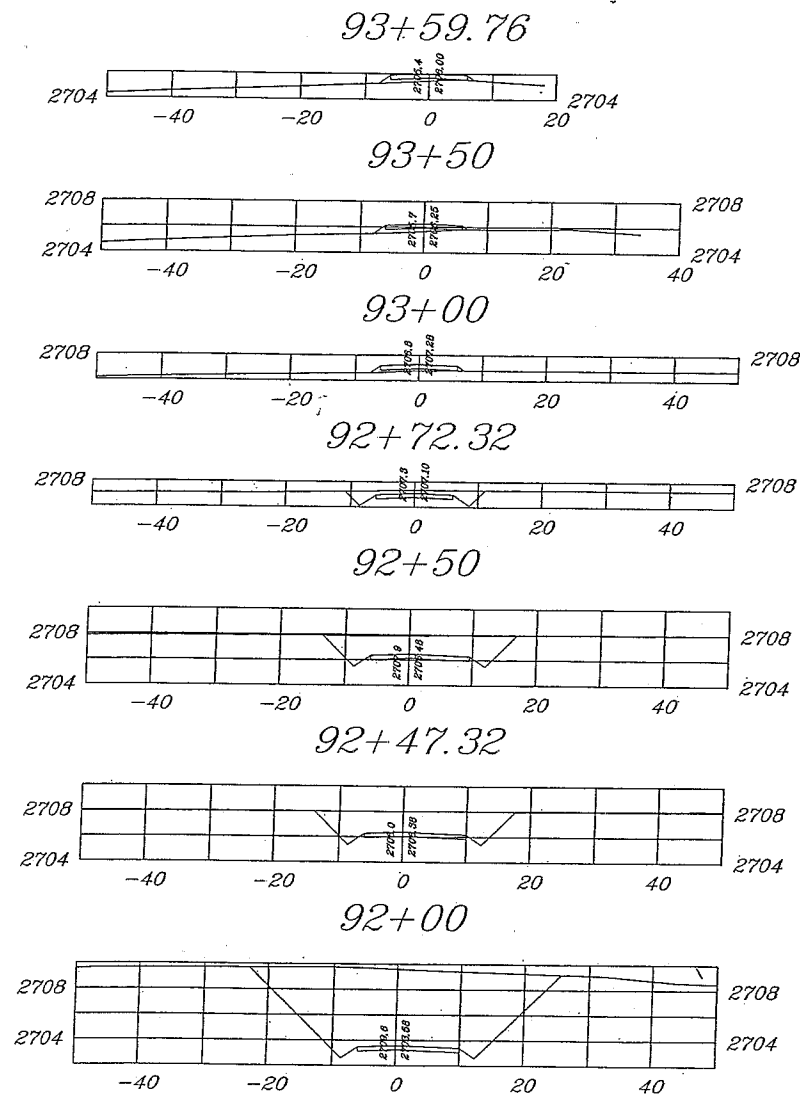
Project Number: 304.306
Date: December 27, 2004
Sheets: 27 of 28

X021

Design 1

Eden Prairie, MN

Revision	Date	Number	By
Δ	-	-	-
PLAN NOTES OR GENERAL NOTES			



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Signed: _____

Date: _____ License Number: 4523

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Bismarck, North Dakota 58504
Phone: 701.258.6507 Fax: 701.224.1163
Web: www.ulteig.com
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Checked By: CJK
Approved By: CJK

Verizon ND4 Roughrider
Access Road Cross-sections
93+59.76 - 92+00

Project Number: 304.306
Date: December 27, 2004
Sheets: 28 of 28

X022

PRELIMINARY NOT
FOR CONSTRUCTION

December 30, 2004

ND4 ROUGHRIDER

ND4 ROUGHRIDER

Verizon Wireless

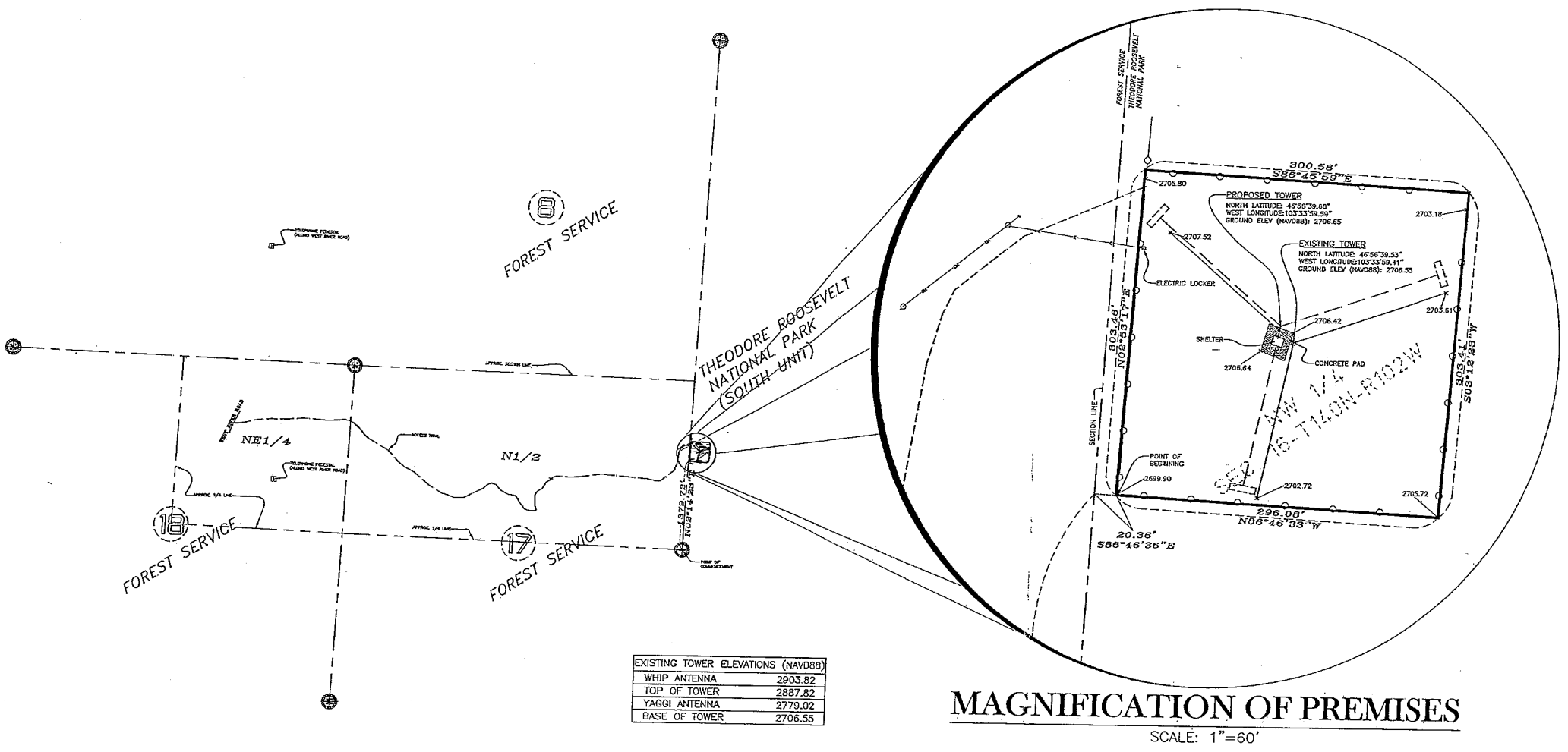
Medora, North Dakota

Revision	Date	Number	By
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PLAN NOTES OR GENERAL NOTES

SYMBOL LEGEND

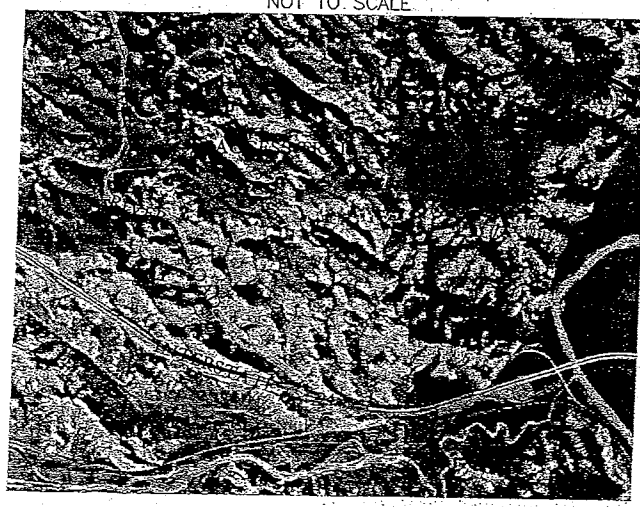
- MONUMENT FOUND
- POWER POLE
- ANCHOR
- TELEPHONE PEDESTAL
- FENCE - WOVEN WIRE
- OH — OVERHEAD POWER
- E — UNDERGROUND ELECTRIC
- EXISTING CONCRETE
- EXISTING GRAVEL



MAGNIFICATION OF PREMISES
SCALE: 1"=60'

VICINITY MAP

NOT TO SCALE



I, Alan W. Erickson, a land surveyor duly registered under the laws of the state of North Dakota, hereby certify that the information shown hereon is based on a field survey conducted under my supervision on the -th day of month year, and is true and correct to the best of my belief and knowledge. Any alteration of the information shown hereon will void this certification.

Print Name: Alan W. Erickson
Signed: *Alan W. Erickson*
Date: 11/22/04 License Number: 1202

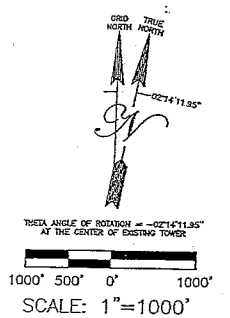


Ulteigengineers

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1412 Basin Avenue
Bismarck, North Dakota 58504
Phone: 701.258.6507 Fax: 701.224.1163
Web: www.ulteig.com
Drawn By: DDC
Checked By: AWE
Approved By: AWE

VERIZON WIRELESS
ND4 ROUGHRIDER

Project Number: 304.169
Date: September 3, 2004
Sheets: 1 of 1



PREMISES DESCRIPTION

A TRACT OF LAND LOCATED IN A PART OF THE NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER OF SECTION 16-T40N-R102W, BILLINGS COUNTY, NORTH DAKOTA, BEING FURTHER DESCRIBED AS FOLLOWS:
COMMENCING AT THE WEST ONE-QUARTER CORNER OF SECTION 16; THENCE N02°14'23"E ON THE WEST LINE OF SAID SECTION 16 A DISTANCE OF 1379.72 FEET; THENCE S86°46'36"E A DISTANCE OF 20.36 FEET TO THE POINT OF BEGINNING; THENCE N02°53'17"E A DISTANCE OF 303.48 FEET; THENCE S86°45'59"E A DISTANCE OF 300.58 FEET; THENCE S03°12'23"W A DISTANCE OF 303.41 FEET; THENCE N86°46'33"W A DISTANCE OF 296.08 FEET TO THE POINT OF BEGINNING. CONTAINING 90,950 SQUARE FEET OF LAND MORE OR LESS. THE BASIS OF BEARINGS IS THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD, 83.

Omni-Directional 360°/12 dBd

Mechanical specifications

Length		
Overall	5842 mm	230 in
Radome	5342 mm	210 in
Diameter	Ø111.25 mm	4.38 in
Weight	35 kg	77 lbs
Wind area	0.65 m ²	6.99 ft ²
Wind load at 50 m/s	1020 N	229 lbs

Support Pipe

Aluminum alloy diameter Ø110 mm (4.29 in), length 500 mm (19.7).

Antenna consisting of aluminum alloy. Dipoles covered by a polyurethane painted fiberglass radome. **Inverted models available.**

Mounting Bracket: #36413001

Downtilt Bracket: N/A

Electrical specifications

Frequency Range	806-870 MHz
	824-896 MHz
	890-941 MHz

Specify Frequency Range When Ordering

Impedance	50Ω
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³⁾ Connector	N, NE, DIN, EDIN
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¹⁾ VSWR	≤1.60:1
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Polarization	Vertical
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¹⁾ Gain	12 dBd
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²⁾ Power Rating	500 W
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¹⁾ Half Power Angle	
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H-Plane	360°
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E-Plane	3.5°
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¹⁾ Lobe Tilt	1.25°
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¹⁾ Null Fill	10%
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Lightning Protection	Direct Ground
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¹⁾ Typical Values

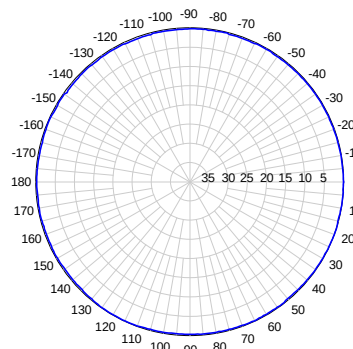
²⁾ Power Rating limited by connector only.

³⁾ NE indicates an elongated N Connector.

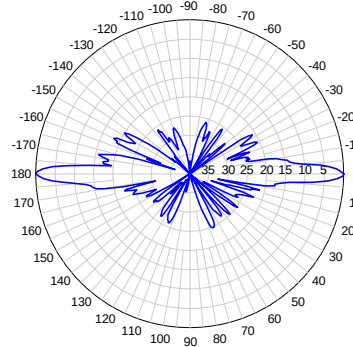
E-DIN indicates an elongated DIN Connector.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Radiation-pattern¹⁾



Horizontal



Vertical

BCD-80612

When ordering, replace "___" with connector type.



806-960 MHz



Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- A 1¼" four-channel extrusion running the entire length of the antenna for unmatched strength and rigidity.
- Durable brass feedline design that eliminates the need for solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

Every Antel antenna is under a five-year limited warranty for repair or replacement.

Inverted Models Available.

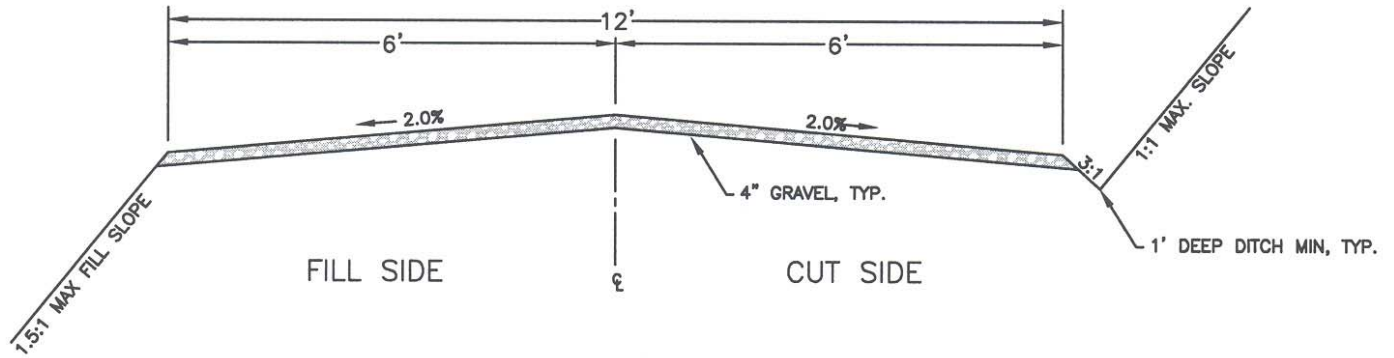
806-870, 824-896, 890-941 MHz

Antel
INTERNATIONAL, INC.

Revision Date: 2/21/03

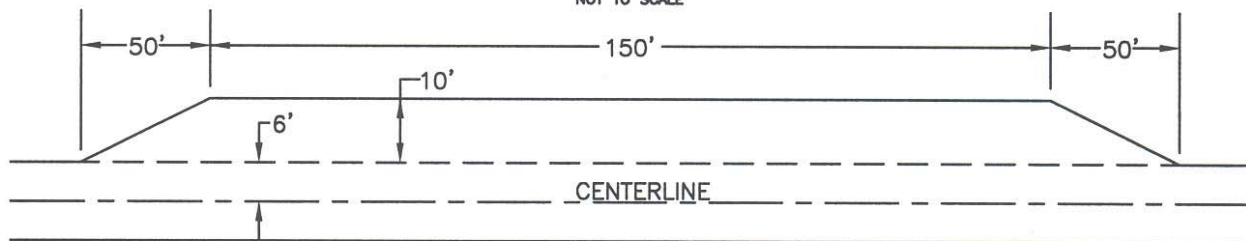
TYPICAL 12.0' MIN. WIDE ROADWAY

NOT TO SCALE



TURNOUT DETAIL

NOT TO SCALE



ROAD DATA SPECIFICATIONS

DESIGN SPEED: 15 MPH

DESIGN CLASS: LOCAL

TYPE OF ALIGNMENT: GEOMETRIC

TURNOUT SPACING: _____

MAX GRADE: 8% (>8% REQUIRES VARIANCE)

MIN GRADE: 1%

CULVERT SIZING REQUIREMENTS:

50-YR EVENT, CHECK 100-YR

PLANS TO INCLUDE:

COVER SHEET WITH VICINITY MAP

PLAN & PROFILE SHEETS

CROSS SECTIONS (EVERY 50' STATIONS MIN.)

MASS DIAGRAM

MATERIAL LIST INCLUDING QUANTITIES

SHOW SECTION CORNER TIES

GOVERNING SPECIFICATIONS AND DESIGN MANUALS:

STANDARD SPECIFICATIONS FOR
CONSTRUCTION OF ROADS AND BRIDGES
ON FEDERAL HIGHWAY PROJECTS, USDOT -
FEDERAL HIGHWAY ADMINISTRATION 2003

MANUAL ON UNIFORM TRAFFIC CONTROL
DEVICES, 2003 EDITION

FOREST SERVICE HANDBOOK 7109

TYPICAL ROAD SECTION DETAIL

GRASSLANDS ENGINEER

DATE