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GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS	*WZD–100–A
TEMPORARY TRAFFIC CONTROL DEVICES	*WZD–125–E

GENERAL PROVISIONS

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE PROPOSAL AND ACCOMPANYING SPECIFICATIONS FOR THIS PROJECT INCLUDING THE 2012 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, AASHTO'S 2011 A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND MDOT'S 2017 GUIDELINES FOR GEOMETRICS ON LOCAL AGENCY PROJECTS, BOTH 3R AND 4R GUIDELINES.

PAVEMENT MARKING AND PLACING OF TRAFFIC CONTROL SIGNS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, 2011 EDITION. THIS WORK WILL BE DONE PRIOR TO THE FINAL ACCEPTANCE OF THIS PROJECT.

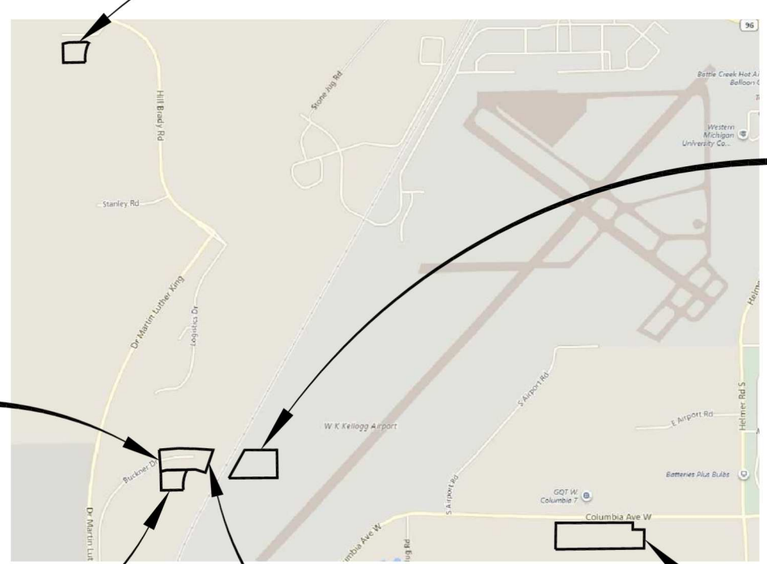
THE LOCATION OF ALL PUBLIC UTILITIES SHOWN ON THESE PLANS IS TAKEN FROM THE BEST AVAILABLE DATA. THE CITY OF BATTLE CREEK WILL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATION FROM THE LOCATIONS SHOWN. PURSUANT TO ACT 174 OF THE P.A. OF 2013, AS A CONDITION OF THIS CONTRACT, NOTICE SHALL BE GIVEN TO MISS DIG PRIOR TO UNDERGROUND WORK TO BE PERFORMED IN ACCORDANCE WITH THIS CONTRACT, PHONE (800) 482–7171. UTILITY SERVICE CONNECTIONS ARE NOT SHOWN ON THE PLANS AND ARE NOT THE RESPONSIBILITY OF THE CITY.

THE ELEVATIONS ON THESE PLANS ARE BASED ON NAVD 1988 VERTICAL DATUM.

CITY OF BATTLE CREEK

BUCKNER DRIVE
EXTENSION TO WK KELLOGG AIRPORT &
SITE IMPROVEMENTS SHEETS FOR
SYSTEX, NEXTHERMAL, COLUMBIA AND WK KELLOGG AIRPORT

SITE IMPROVMENTS
NEXTHERMAL
SHEETS NS-111 - NS-170



SITE IMPROVEMENTS
WK KELLOGG AIRPORT
SHEETS A1 - A4

BUCKNER DRIVE
SHEETS R1 - R24
POB STA 20+00

SITE IMPROVEMENTS
SYSTEX
SHEETS SS-111 - SS-170

LOCATION MAP
N.T.S.

BUCKNER DRIVE
POE STA 29+00

SITE IMPROVEMENTS
COLUMBIA
SHEETS CS-110 - CS-170

CITY OF BATTLE CREEK

MARK BEHNKE
• MAYOR •

DAVE WALTERS
• VICE MAYOR •

VICTORIA HOUSER
• CITY CLERK •

JOHN GRIFFIN
LYNN WARD GRAY
KATE FLORES
CHRISTOPHER SIMMONS
SUSAN BALDWIN
KAYTEE FARIS
SHERRY SOFIA
• CITY COMMISSION •

CHRISTOPHER DOPP, P.E.
• DEPARTMENT OF PUBLIC WORKS DIRECTOR •

CARL E. FEDDERS, P.E.
• CITY ENGINEER •

CITY OF BATTLE CREEK

CONTRACT FOR: PAVEMENT REMOVAL, CURB REMOVAL, HMA ROAD CONSTRUCTION, CURB PLACEMENT, STORM SEWER, SIGNING, RESTORATION ON BUCKNER DRIVE. SITE GRADING ON THE SYSTEX, NEXTHERMAL, COLUMBIA AND WK KELLOGG AIRPORT PROPERTIES.

OHM Advancing Communities
Engineering Advisors
34000 Plymouth Road | Livonia, MI 48150
p (734) 522-6711 | f (734) 522-6427

PREPARED UNDER THE SUPERVISION OF:

STATE OF MICHIGAN
ALAN L. HALBEISEN
ENGINEER NO. 29715
LICENSED PROFESSIONAL ENGINEER

29715
Registration No.

ALAN HALBEISEN, P.E.

Date

CITY OF BATTLE CREEK APPROVAL:

CHRIS DOPP, P.E. – DIRECTOR OF PUBLIC WORKS

7-12-18
DATE

BATTLE CREEK BREAKFAST CAPITAL OF THE WORLD

REVISIONS

PROJECT NO.	SHEET NO.
1053-18-0010	R1

180010COV.dwg

WATER & SEWER UTILITY SYMBOLS

EXISTING

- ST — STORM MANHOLE
- SQUARE CATCH BASIN
- ROUND CATCH BASIN
- CULVERT
- CULVERT W/O END SECTION
- CULVERT W/END SECTION
- S — SANITARY MANHOLE
- CO — CLEAN OUT
- GW — GATE VALVE & WELL
- GATE VALVE & BOX
- W — WATER STOP BOX
- FIRE HYDRANT
- MP — METER PIT
- WATER METER
- SH — SPRINKLER HEAD
- IRRIGATION VALVE

PROPOSED

- STORM MANHOLE
- INLET/CATCH BASIN
- CULVERT END SECTION
- SANITARY MANHOLE
- GV&W — GATE VALVE & WELL
- GV&B — GATE VALVE & BOX
- TSV&W — TAPPING SLEEVE VALVE & WELL
- TSV&B — TAPPING SLEEVE VALVE & BOX
- FIRE HYDRANT

REAL ESTATE SYMBOLS

- CONTIGUOUS PROPERTY SYMBOL
- XX — PARCEL NUMBER BOX
- NO ROW IMPACTS

MISCELLANEOUS UTILITY SYMBOLS

EXISTING

- GUY WIRE
- GP — GUY POLE
- U — UTILITY POLE
- U — UTILITY POLE W/LIGHT
- LIGHT/DECOR LAMP POLE
- F — FLOOD LIGHT
- GAS VALVE
- G — GAS VENT
- G — GAS METER
- G — GAS RISER
- TRAFFIC SIGNAL
- P — PEDESTRIAN RISER
- T — TRANSFORMER PAD
- U — PRIVATE UTILITY MANHOLE
- R R — RAILROAD CROSSING
- E — ELECTRIC METER
- PB — PHONE BOOTH
- TS — TRAFFIC SIGNAL CONTROLLER
- HAND HOLE
- SIG — SIGNAL PUCK
- E — ELECTRIC RISER
- T — TELEPHONE RISER
- C — CABLE TV RISER
- W — MONITORING WELL
- UNDERGROUND MARKER

PROPOSED

- ROADWAY LIGHT POLES
- PEDESTRIAN LIGHT POLES
- HAWK SIGNAL POLES W/LIGHT

MISCELLANEOUS SYMBOLS

EXISTING

- RIPRAP
- SIGN
- FLOW DIRECTION
- STUMP
- WETLAND
- CONIFEROUS TREE — CL 1 1" TO 5", CL 2 6" TO 17", CL 3 18" TO 35", CL 4 36" AND UP
- DECIDUOUS TREE
- CONIFEROUS SHRUB
- DECIDUOUS SHRUB
- SB# — SOIL BORING
- SECTION CORNER
- MON — MONUMENT
- IRON ROD/PIPE
- PK — PK NAIL
- BM# — BENCHMARK
- TP# — TRAVERSE POINT
- MAIL/NEWSPAPER BOX
- FP — FLAG POLE
- POST
- HAZARDOUS OR FLAMMABLE MATERIAL — USED WITH UNDERGROUND GAS & ELECTRICAL LINES
- CAUTION – CRITICAL UNDERGROUND UTILITY — USED WITH TELEPHONE & FIBER OPTIC LINES

PROPOSED

- RIPRAP
- SIGN
- FLOW DIRECTION
- XX XX XXX — STRUCTURE NUMBER WM SAN STM
- DETECTABLE WARNING SURFACE
- 29 — SOIL EROSION CONTROL ITEM
- CONC PAVT, MISC DECORATIVE COLORED, _ INCH
- REINFORCED TURF DRIVEWAY
- DRIVE ISLAND, COLORED, MOUNDED, 8 INCH

UTILITY PATTERN

EXISTING

- ELEC — ELECTRICAL *
- 6" (COMPANY) GAS — GAS\OIL
- (COMPANY) CABLE/TEL — CABLE/TELEPHONE *
- FIBER OPTIC — FIBER OPTIC *
- 12" WM — WATER
- 12" SAN — SANITARY
- 12" STM — STORM

PROPOSED

- 12" — STORM/SANITARY/WATER
- CONDUIT
- 12" — PRIMARY UTILITY WILL HAVE A CONTINUOUS LINESTYLE, WITH THE SECONDARY UTILITY MATCHING ITS RESPECTIVE EXISTING UTILITY LINESTYLE

*OH = OVERHEAD , UG = UNDERGROUND

ROW PATTERN

EXISTING

- ROW — ROW
- PROPERTY/PARCEL

PROPOSED

- HIGHWAY EASEMENT
- TEMPORARY EASEMENT

TOPO PATTERN

EXISTING

- HEDGE/TREE
- FENCE
- GUARDRAIL
- CENTERLINE OF DITCH
- RAILROAD
- WETLAND/EDGE OF WATER

PROPOSED

- GRADING LIMIT (SLOPE STAKE)
- CENTERLINE OF DITCH
- FENCE

REMOVAL LEGEND

- SIDEWALK, REM
- HMA SURFACE, REM
- COLD MILLING HMA SURFACE
- PAVT, REM
- CURB AND GUTTER, REM
- TREE, REM
- S-XXXXXX — SALVAGE
- B-XXXXXX — BULKHEAD
- A-XXXXXX — ABANDON
- R-XXXXXX — REMOVE
- R/C-XXXXXX — REMOVE, PAID AS CLEARING
- ADJ-XXXXXX — ADJUST
- REL-XXXXXX — RELOCATE
- REC-XXXXXX — RECONSTRUCT
- R B/O-XXXXXX — REMOVE BY OTHERS
- ADJ B/O-XXXXXX — ADJUST BY OTHERS
- REL B/O-XXXXXX — RELOCATE BY OTHERS

IF NECESSARY FOR CLARITY

- (S) — SALVAGE
- (B) — BULKHEAD
- (A) — ABANDON
- (C) — CLEARING
- (R) — REMOVE
- (REL) — RELOCATE
- (REC) — RECONSTRUCT
- (REL B/O) — RELOCATE BY OTHERS
- (ADJ B/O) — ADJUST BY OTHERS

OHM
ARCHITECTS ENGINEERS PLANNERS
34000 Plymouth Road
Livonia, MI 48150
P (734) 522-6711 | F (734) 522-6427
OHM-ADVISORS.COM

REVISIONS:

DATE: Value | PROJ NUMBER: 1055-180010 | EMS: Value | PROJ MGR: Value | CADD: Value | COUNTY: Value | CITY/VILLAGE/TOWNSHIP: Value | SCALE: H: NTS V: NTS | HORIZ DATUM: Value | VERT DATUM: Value

CITY OF BATTLE CREEK
BUCKNER DR
LEGEND

SHEET: R2

DRAWING PATH: P:\1000_1999\1055180010_Buckner_Drive_Overpass\Drawings\Civil\Misc\180010LEG.dwg Jul 05, 2018 - 2:29pm

GENERAL NOTES

1. THE CONTRACTOR SHALL KEEP ALL CONSTRUCTION ACTIVITY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITY OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR. NO TREE OUTSIDE THE LIMITS OF CONSTRUCTION SHALL BE REMOVED WITHOUT WRITTEN PERMISSION FROM THE OWNER AND ENGINEER.

2. SITES UTILIZED FOR THE PURPOSE OF STORING EQUIPMENT, EXCESS EXCAVATED MATERIALS, STRIPPED TOPSOIL, ETC. SHALL BE ENVIRONMENTALLY SUITABLE FOR SUCH PURPOSE AND SHALL BE APPROVED IN ADVANCE BY THE ENGINEER. ENVIRONMENTALLY SUITABLE SITES SHALL BE LEVEL, DEVOID OF MATURE STANDS OF TREES AND ISOLATED FROM DRAINAGE FACILITIES AND FEATURES, WETLANDS, STREAMS, AND STREAM CORRIDORS.

3. EXCAVATED MATERIALS SHALL BE PLACED ON THE UPHILL SIDES OF TRENCHES.

4. FINAL GRADING SHALL BE CONSISTENT WITH GRADING PLAN AND/OR PRE-CONSTRUCTION TOPOGRAPHY TO MAINTAIN DRAINAGE AND AESTHETICS. ALL DISTURBED NON PAVED AREAS SHALL BE RE-SEEDED, TO PRODUCE A COVER SIMILAR TO THE ORIGINAL COVER.

5. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED. CONTRACTOR SHALL PROVIDE A MINIMUM OF 3" OF TOPSOIL.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING AND EXPORTING ALL MATERIALS REQUIRED TO PROPERLY GRADE THE SITE TO THE FINISHED ELEVATIONS SHOWN ON THE PLANS. THE CONTRACTOR SHALL MAKE HIS OWN DETERMINATIONS OF CUT AND FILL QUANTITIES AND SHALL ALLOW FOR REMOVAL OF EXCESS MATERIAL OR THE IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

7. STRAW BALES, SILT FENCES, OR OTHER FILTERING DEVICES SHALL BE MAINTAINED AT AREAS OF STOCKPILED MATERIALS, EXCAVATED AREAS, CATCH BASINS AND OTHER STORM WATER INLET STRUCTURES IN CONSTRUCTION AREAS TO CONTROL SILT RUNOFF.

8. IF, AT ANY TIME, BEFORE THE EXPIRATION OF THE CONTRACT BOND ANY PART OF THE SEEDED AREA IS NOT IN GOOD CONDITION, THE CONTRACTOR SHALL FERTILIZE AND RESEED AS OFTEN AS NECESSARY TO GET A GOOD STAND OF GRASS.

9. ALL MOTORIZED CONSTRUCTION EQUIPMENT SHALL BE EQUIPPED WITH PROPER EMISSIONS CONTROL EQUIPMENT AND INTAKE SILENCERS IN ACCORDANCE WITH FEDERAL SAFETY STANDARDS TO REDUCE EXCESSIVE NOISE.

10. CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED TO NORMAL DAYLIGHT WORKING HOURS UNLESS APPROVED BY THE ENGINEER.

11. SHOULD ANY HISTORICAL/ARCHAEOLOGICAL ARTIFACTS BE UNCOVERED DURING CONSTRUCTION, THE OWNER AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

12. PROVIDE, ERECT AND MAINTAIN ALL NECESSARY BARRICADES, WARNING SIGNS, DANGER SIGNALS, AND ALL OTHER APPROPRIATE PRECAUTIONS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR SAFETY.

13. EXISTING PAVEMENT SHALL BE RESTORED IN ALL AREAS WHERE DISTURBED/DAMAGED.

14. PAVEMENT ON TRAVELED ROADWAYS SHALL BE KEPT CLEAN AT ALL TIMES FROM MUD AND MATERIAL.

CONSTRUCTION PROCEDURES FOR INADVERTENT FINDS

INADVERTENT FINDS PROCEDURES ARE INTENDED TO MINIMIZE THE EFFECT OF CONSTRUCTION WORK WHEN UNANTICIPATED ARTIFACTS, CULTURAL FEATURES OR HUMAN REMAINS ARE ENCOUNTERED. IF ARTIFACTS OR BONES ARE DISCOVERED DURING THE PROJECT, WORK AT THE LOCATION OF THE FIND SHALL STOP. THE LOCATION SHALL BE CORDONED OFF AND PROTECTED TO PREVENT DISTURBANCE OR VANDALISM. IF ARTIFACTS ARE FOUND, THE PROJECT MANAGER OR OTHER RESPONSIBLE PARTY SHALL CONTACT THE STATE ARCHAEOLOGIST. IF BONES THAT ARE POSSIBLY HUMAN ARE FOUND, THE PROJECT MANAGER OR OTHER RESPONSIBLE PARTY SHALL CONTACT THE LOCAL POLICE AUTHORITY AND THE STATE ARCHAEOLOGIST. IN CONSULTATION WITH THE POLICE AND/OR THE STATE ARCHAEOLOGIST, A DETERMINATION WILL BE MADE REGARDING APPROPRIATE STEPS TO BE TAKEN AT THE FIND LOCATION. A FIELD EVALUATION MAY BE REQUIRED TO DETERMINE WHETHER ARCHAEOLOGICAL INVESTIGATION OF THE SITE IS NECESSARY. IF AN INVESTIGATION TAKES PLACE, CONSTRUCTION WORK MAY CONTINUE AT OTHER LOCATIONS ON THE PROJECT AWAY FROM THE FIND SPOT. ONCE APPROPRIATE STEPS HAVE BEEN TAKEN TO RECORD AND RECOVER THE ARTIFACTS AND/OR HUMAN REMAINS AT THE FIND LOCATION, WORK WILL BE ALLOWED TO CONTINUE AT THAT LOCATION.

ADJUSTING PROPERTY CORNERS

IT IS THE INTENT THAT ALL PROPERTY CORNERS ON THIS PROJECT BE PRESERVED AND THAT, WHERE NECESSARY, PROPERTY CORNERS BE REPLACED OR ADJUSTED, WHETHER SHOWN OR NOT.

SLOPE RESTORATION

MULCH BLANKETS SHALL BE INSTALLED ON ALL GRADED SLOPES AS IDENTIFIED IN THE SPECIAL PROVISION FOR TURF ESTABLISHMENT, PERFORMANCE.

SIGN INSTALLATION

WHEN ATTACHING SIGNS TO SUPPORTS, TIGHTEN THE NUT, NOT THE BOLT HEAD.

NYLON WASHERS SHALL BE PLACED BETWEEN THE STEEL WASHER AND THE SIGN FACE SHEETING. THE NYLON WASHERS ARE TO BE CONSIDERED PART OF THE ATTACHING DEVICES AND HARDWARE. NYLON WASHERS SHALL HAVE A $\frac{3}{8}$ INCH INNER DIAMETER, $\frac{7}{8}$ INCH OUTER DIAMETER AND $\frac{1}{16}$ INCH THICKNESS.

THE CONTRACTOR SHALL ATTACH A DATE STICKER TO THE BACK OF ALL SIGNS INSTALLED ON THE CONTRACT. STICKERS WILL BE SUPPLIED TO THE CONTRACTOR AT THE PRECONSTRUCTION MEETING BY THE ENGINEER. STICKERS WILL BE SUPPLIED BY THE CITY OF BATTLE CREEK.

COOLING OF BITUMINOUS MAT

IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE SURE THE BITUMINOUS MAT IS PROPERLY COOLED BEFORE OPENING TO TRAFFIC. THIS OPERATION IS INCLUDED IN THE COST OF THE BITUMINOUS MATERIALS.

UTILITIES

THE FOLLOWING UTILITY COMPANIES HAVE FACILITIES WITHIN THE PROJECT LIMITS AND MAY BE RELOCATING OR REPLACING FACILITIES, WHICH MAY OR MAY NOT BE SHOWN ON THE PLANS IN CONJUNCTION WITH THE PROPOSED IMPROVEMENTS. THE CONTRACTOR OR SUBCONTRACTOR MAY BE REQUIRED TO COORDINATE THEIR OPERATIONS WITH THESE AND/OR OTHER UTILITIES AS DIRECTED BY THE ENGINEER. NO ADDITIONAL PAYMENT OR COMPENSATION WILL BE ALLOWED FOR THIS ACTIVITY.

1. CITY OF BATTLE CREEK (WATER DIVISION)
   150 S. KENDALL ST.
   BATTLE CREEK, MI 49015
   ATT: PERRY HART
   PH: (269)-966-3496

2. CITY OF BATTLE CREEK (SEWER DIVISION)
   2000 W. RIVER RD.
   BATTLE CREEK, MI 49017
   ATTN: BRYAN CRAWFORD
   PH: (269)-966-3513

3. CITY OF BATTLE CREEK (SIGNS AND SIGNALS DIVISION)
   150 S. KENDALL ST
   BATTLE CREEK, MI 49015
   ATTN: BRAD HOFFMAN
   PH: (269)-966-3527

4. FOR TELEPHONE:
   AT&T
   2919 MILLCORK
   KALAMAZOO, MI 49001
   ATTN: JEFF SAYLOR
   PH: (269)-384-4490

5. FOR CABLE TELEVISION:
   COMCAST
   11921 E. M-89
   RICHLAND, MI 49083
   ATTN: JOE SCHOPT
   PH: (269)-203-7114

6. FOR ELECTRIC:
   CONSUMERS ENERGY
   311 E. MICHIGAN AVE.
   BATTLE CREEK, MI 49017
   ATTN: MATT KOEPKE
   PH: (269)-969-8595

7. FOR GAS:
   SEMCO ENERGY
   15851 HELMER ROAD
   BATTLE CREEK, MI 49015
   ATTN: JULIE CONANT
   PH: (269)-966-0404 (ext. 5574)

UNDERGROUND UTILITIES

FOR PROTECTION OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL DIAL 1-800-482-7171 (OR 811) A MINIMUM OF 3 WORKING DAYS PRIOR TO EACH EXCAVATION IN THE VICINITY OF UTILITY LINES. ALL "MISS DIG" PARTICIPATING MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE PART OF THE "MISS DIG" ALERT SYSTEM.

OUT OF SERVICE UTILITIES

IF PLAN INFORMATION INDICATES AN EXISTING UNDERGROUND UTILITY IS OR WILL BE OUT OF SERVICE WITHIN THE LIMITS OF THIS CONTRACT, THE CONTRACTOR IS CAUTIONED TO TREAT SUCH A LINE AS IF IT WERE STILL IN SERVICE AND NOTIFY "MISS DIG" WHEN WORKING IN THE AREA OF THE OUT OF SERVICE FACILITY.

EXISTING WATER MAINS AND SEWERS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERLY IDENTIFIED EXISTING WATER MAINS AND/OR EXISTING SEWERS DURING THE CONSTRUCTION OF THIS PROJECT.

MAINTAINING TRAFFIC/TRAFFIC CONTROL

1. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER THAT LOCAL TRAFFIC AND EMERGENCY VEHICLES SHALL HAVE ACCESS WITHIN THE PROJECT AT ALL TIMES.

SIGNS

ALL SIGNS SHALL BE INSTALLED, REMOVED AND/OR SALVAGED ACCORDING TO THE CURRENT EDITION OF "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND THE CURRENT EDITION OF MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) "STANDARD SPECIFICATIONS FOR CONSTRUCTION."

PROHIBITED CONSTRUCTION ACTIVITIES

1. USING ANY SUBSTANCE OTHER THAN WATER TO CONTROL DUST.

2. DISPOSING OF EXCESS OR UNSUITABLE EXCAVATED MATERIAL IN WETLANDS OR FLOOD PLAINS, EVEN WITH PERMISSION OF PROPERTY OWNERS.

3. INDISCRIMINATE, ARBITRARY OR CAPRICIOUS OPERATION OF EQUIPMENT OUTSIDE THE PROPERTY LINES AND EASEMENT LINES.

4. PUMPING OF SEDIMENT-LADEN WATER FROM TRENCHES OR OTHER EXCAVATION INTO ANY SURFACE WATERS, ANY STREAM CORRIDORS, ANY WETLANDS, OR STORM SEWERS.

5. DISCHARGING POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWERAGE AND OTHER HARMFUL WASTE INTO OR ALONGSIDE OF RIVERS, STREAMS, IMPOUNDMENTS OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO.

6. DAMAGING VEGETATION OUTSIDE OF THE CONSTRUCTION AREA.

7. DISPOSAL OF TREES, BRUSH AND OTHER DEBRIS IN ANY STREAM CORRIDORS, ANY WETLANDS, ANY SURFACE WATERS, OR AT UNSPECIFIED LOCATIONS.

8. OPEN BURNING OF CONSTRUCTION DEBRIS.

9. STORING CONSTRUCTION EQUIPMENT AND VEHICLES AND/OR STOCKPILING CONSTRUCTION MATERIALS ON PROPERTY, PUBLIC OR PRIVATE, NOT PREVIOUSLY APPROVED BY THE ENGINEER FOR SAID PURPOSES.

10. PERFORMANCE OF CONSTRUCTION ACTIVITIES ON SUNDAY UNLESS APPROVED BY THE OWNER AND THE ENGINEER.

PERMITS AND FEES

IF NECESSARY, THE CONTRACTOR SHALL BE REQUIRED TO OBTAIN ALL NECESSARY PERMITS (UTILITY, BUILDING, PLUMBING, ELECTRICAL, SOIL EROSION, RIGHT-OF-WAY, ETC.) PRIOR TO COMMENCING CONSTRUCTION OPERATIONS.

THE CONTRACTOR SHALL BE REQUIRED TO APPLY, OBTAIN, AND PAY FOR THE NECESSARY PERMITS PRIOR TO WORK ON FACILITIES BELONGING TO THE ABOVE AGENCIES, A MINIMUM OF 72 HOURS NOTICE MUST BE GIVEN IN ORDER TO ENSURE PROPER INSPECTION BY THE RESPECTIVE AGENCIES.

WETLANDS/FLOODPLAINS

THE SITE DOES CONTAIN WETLANDS BUT IS NOT LOCATED IN A FLOODPLAIN.

CONTAMINATED SOILS

THE CONTRACTOR SHALL NOTE THAT ANY CONTAMINATED SOILS ON SITE SHALL BE HANDLED IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

MAINTENANCE

1. GRAVEL ACCESS DRIVES: PROPER MAINTENANCE INCLUDES ADDING ADDITIONAL LAYERS OF STONE WHEN THE ORIGINAL STONE BECOMES COVERED WITH MUD. AFTER EACH STORM EVENT, THE CONTRACTOR SHALL INSPECT THE ROAD FOR EROSION AND SHALL MAKE ANY NECESSARY REPAIRS. ALL SEDIMENT DROPPED OR ERODED ONTO THE PUBLIC ROAD RIGHT-OF-WAY (ROW) SHALL BE REMOVED IMMEDIATELY BY SWEEPING. FACILITY DRIVES SHALL BE MAINTAINED IN A SIMILAR MANNER.

2. SOIL STOCKPILES: PERIODIC INSPECTIONS SHALL BE DONE TO ENSURE EXCESSIVE EROSION HAS NOT OCCURRED. IF RUNOFF OR WIND EROSION HAS OCCURRED, THE CONTRACTOR SHALL REDUCE SIDE SLOPES OR RE-STABILIZE THE STOCKPILE BY PROVIDING TEMPORARY SEEDING. WHEN FILTER FABRIC IS USED AROUND A SOIL STOCKPILE, PERIODIC CHECKS SHALL BE MADE TO ENSURE THAT PIPING HAS NOT OCCURRED UNDER THE FENCING AND TO ENSURE THAT THE FENCE HAS NOT COLLAPSED DUE TO SOIL SLIPPAGE OR ACCESS BY CONSTRUCTION EQUIPMENT. THE CONTRACTOR SHALL REPAIR ANY DAMAGED FENCING IMMEDIATELY. BERMS AT THE BASE OF SOIL STOCKPILE SHALL BE REPLACED IF DAMAGED.

3. DUST CONTROL: TO PREVENT DUST FROM BECOMING A PUBLIC NUISANCE AND CAUSING OFF-SITE DAMAGES, THE CONTRACTOR SHALL MAINTAIN DUST CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PHASE OF THE PROJECT.

4. SILT FENCE: SILT FENCE SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND SEVERAL TIMES DURING PROLONGED RAINFALL EVENTS. IF THE FENCE IS SAGGING OR THE SOIL HAS REACHED ONE-HALF ($\frac{1}{2}$) THE HEIGHT OF THE FABRIC, THE SOIL BEHIND THE FABRIC MUST BE REMOVED AND DISPOSED OF IN A STABLE UPLAND SITE OR THE SOIL CAN BE ADDED TO THE SOIL STOCKPILE. IF THE FABRIC IS BEING UNDERCUT (I.E. WATER IS SEEPING UNDER THE FENCE), THE FENCE SHALL BE REMOVED AND RE-INSTALLED FOLLOWING THE PROCEDURES OUTLINED ABOVE. FABRIC WHICH DECOMPOSES, OR OTHERWISE BECOMES INEFFECTIVE, SHALL BE REMOVED AND REPLACED WITH NEW FILTER FABRIC IMMEDIATELY. SILT FENCES SHALL BE REMOVED ONCE VEGETATION IS WELL ESTABLISHED AND THE UP-SLOPE IS FULLY STABILIZED.

5. INLET FILTERS: PERIODIC INSPECTIONS SHALL BE PERFORMED TO ENSURE THAT THE INTEGRITY OF THE GEOTEXTILE FILTER IS MAINTAINED. THE FABRIC SHALL BE REMOVED AND REPLACED WHEN IT BECOMES SEDIMENT LADEN. THE INLET GEOTEXTILE FILTER SHALL BE REMOVED AFTER THE ESTABLISHMENT OF FINAL GRADE AND TURF ESTABLISHMENT, BUT PRIOR TO PAVEMENT INSTALLATION.

6. SEEDING: NEWLY SEEDED AREAS SHALL BE INSPECTED FREQUENTLY FOR THE FIRST FEW MONTHS TO ENSURE THE GRASS IS GROWING. IF THE SEEDED AREA IS DAMAGED DUE TO RUNOFF, ADDITIONAL STORMWATER MEASURES MAY BE REQUIRED. SPOT SEEDING CAN BE PERFORMED ON SMALL AREAS TO FILL IN BARE SPOTS WHERE THE GRASS DID NOT GROW PROPERLY.

7. MULCHING: MULCHED AREAS SHALL BE CHECKED FOLLOWING EACH RAIN EVENT TO ENSURE MULCH REMAINS IN PLACE. ADDITIONAL TACKING MATERIALS OR NETTING MAY NEED TO BE APPLIED TO HOLD THE MULCH IN PLACE.

8. STREET MAINTENANCE: CONTRACTOR SHALL SCRAPE ALL PUBLIC ROADS AND FACILITY DRIVES ON A DAILY BASIS, OR MORE FREQUENTLY, AS NEEDED. IN ADDITION, CONTRACTOR SHALL PROVIDE SWEEPING OF ALL PUBLIC ROADS AND FACILITY DRIVES ON A MINIMUM OF A WEEKLY BASIS, OR MORE FREQUENTLY, AS NEEDED.

DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST ON THE PROJECT BY SPRAYING WATER ON ANY AGGREGATE OR UNRESTORED SURFACES AS NEEDED OR AS REQUESTED BY THE ENGINEER. THERE WILL BE NO ADDITIONAL PAYMENT FOR THIS WORK.

PROJECT SPECIFIC

ADJUSTMENTS TO SANITARY STRUCTURE COVERS WILL BE PAID FOR AS DR STRUCTURE COVER, ADJ, CASE 1 OR DR STRUCTURE COVER, ADJ, CASE 2 AS APPLICABLE.

MISCELLANEOUS QUANTITIES

TOTAL	UNIT	DESCRIPTION
0.4	LSUM	Mobilization, Max
20	Ft	Exploratory Investigation, Vertical
6151	Cyd	Embankment, CIP
2180	Cyd	Excavation, Earth
200	Cyd	Subgrade Undercutting, Type II, Modified
35	Ea	Boulder, Relocate
5	Ea	Protect Corners
3	Ea	Water Main Conflict, 12 inch

SEE SHEET SS-170 FOR BUCKNER DRIVE SOIL EROSION AND SEDIMENT CONTROL PLAN.

SOIL EROSION QUANTITIES

TOTAL	UNIT	DESCRIPTION
25	Ea	Erosion Control, Inlet Protection, Fabric Drop
3425	Ft	Erosion Control, Silt Fence

MAINTAINING TRAFFIC QUANTITIES

TOTAL	UNIT	DESCRIPTION
330	Syd	Aggregate Base, 6 inch
350	Ton	Maintenance Gravel
327	Syd	HMA Surface, Rem
40	Ton	HMA, Temp Pavt (4E3)
40	Ton	HMA, Temp Pavt (5E3)
20	Ea	Barricade, Type III, High Intensity, Lighted, Furn
20	Ea	Barricade, Type III, High Intensity, Lighted, Oper
90	Ea	Channelizing Device, 42 inch, Furn
90	Ea	Channelizing Device, 42 inch, Oper
2	Ea	Lighted Arrow, Type C, Furn
2	Ea	Lighted Arrow, Type C, Oper
1	LSUM	Minor Traf Devices
150	Ft	Pavt Mrkg, Wet Reflective, Type NR, Point, 4 inch, White, Temp
850	Ft	Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, Yellow, Temp
44	Ft	Pavt Mrkg, Wet Reflective, Type R, Tape, 24 inch, Stop Bar
1	Ea	PTS System, Temp, Furn
1	Ea	PTS System, Temp, Oper
5	Ea	Sign Cover
297	Sft	Sign, Type B, Temp, Prismatic, Furn
297	Sft	Sign, Type B, Temp, Prismatic, Oper
12	Sft	Sign, Type B, Temp, Prismatic, Special, Furn
12	Sft	Sign, Type B, Temp, Prismatic, Special, Oper
1	LSUM	Traf Regulator Control
1	Ea	Driveway Assistance Device, Portable, Temporary

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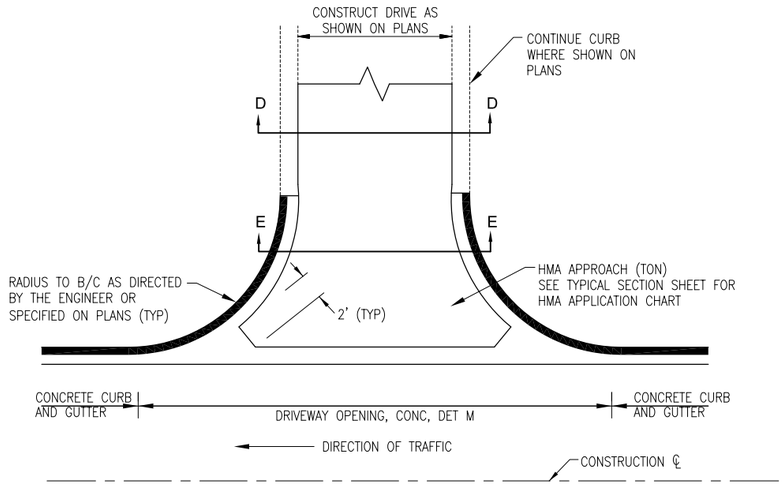
REVISIONS:

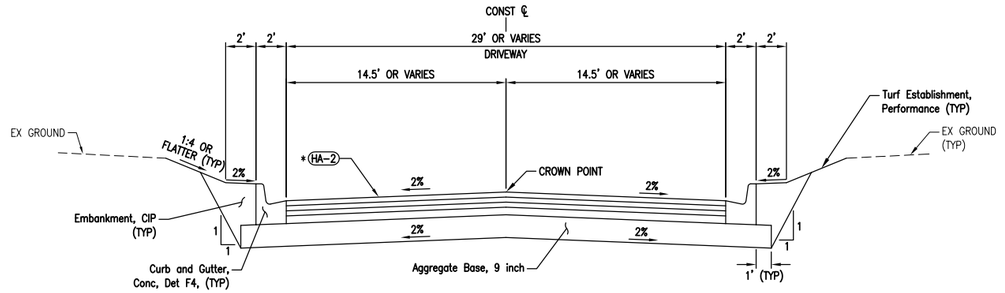
DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
Value	1055-15-0010	Value	Value	Value	Value	Value	NTS	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
GENERAL NOTES

SHEET R3



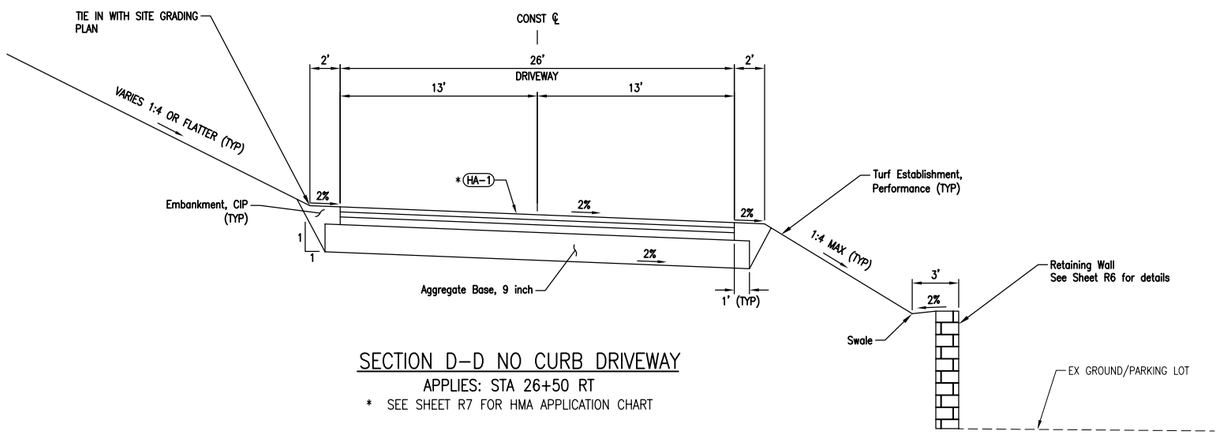
TYPICAL COMMERCIAL HMA DRIVE



SECTION E–E TAP DRIVEWAY

APPLIES: DRIVEWAY ALONG BUCKNER STA 24+50 LT

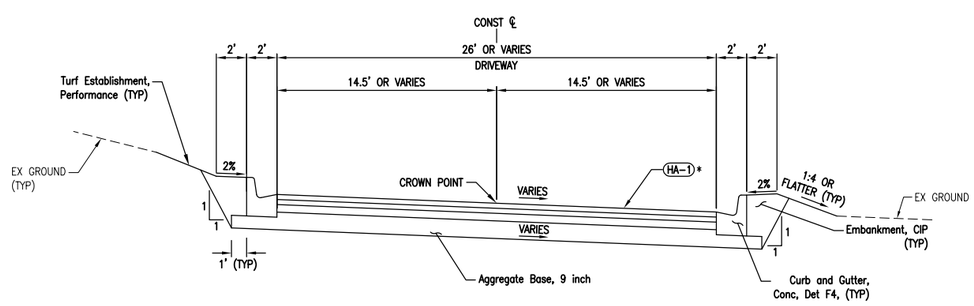
* SEE SHEET R7 FOR HMA APPLICATION CHART



SECTION D–D NO CURB DRIVEWAY

APPLIES: STA 26+50 RT

* SEE SHEET R7 FOR HMA APPLICATION CHART



SECTION E–E SYSTEX CURBED DRIVEWAY APPROACHES (NO CROWN)

APPLIES: DRIVEWAY APPROACH ALONG BUCKNER STA 23+30 RT

APPLIES: DRIVEWAY APPROACH ALONG BUCKNER STA 26+50 RT

* SEE SHEET R7 FOR HMA APPLICATION CHART

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REVISIONS:

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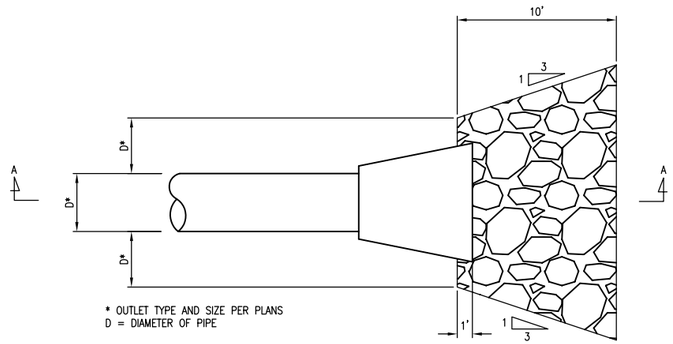
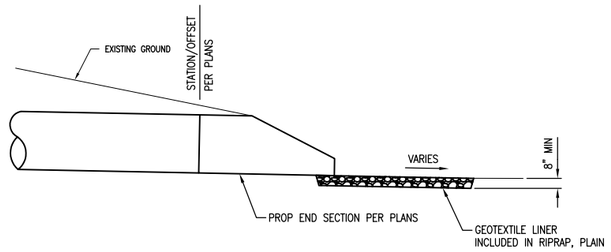
	1053-14-0010	Value	Value	Value	Value	Value	1":	1"=40'	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
MISCELLANEOUS DETAILS

SHEET R4

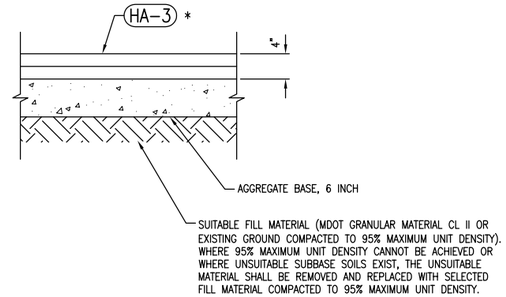
DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Misc\180010DET.dwg Jul 09, 2018 - 10:41am





SECTION A–A

TYPICAL RIPRAP AND END SECTION DETAIL



PARKING LOT SECTION

* SEE HMA APPLICATION CHART ON SHEET R7 FOR LIFT INFORMATION

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RE:RESPNS:

HORIZ DATUM | VERT DATUM
Value | Value

DATE | PROJ NUMBER | ENG | PROJ MGR | CADD | COUNTY | CITY/VILLAGE/TOWNSHIP | SCALE
105-150-0010 | Value | Value | Value | Value | Value | Value | H: 1"=40' | V: 1"=4'

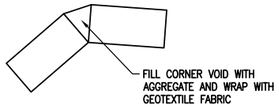
CITY OF BATTLE CREEK
BUCKNER DR
MISCELLANEOUS DETAILS

SHEET
R5

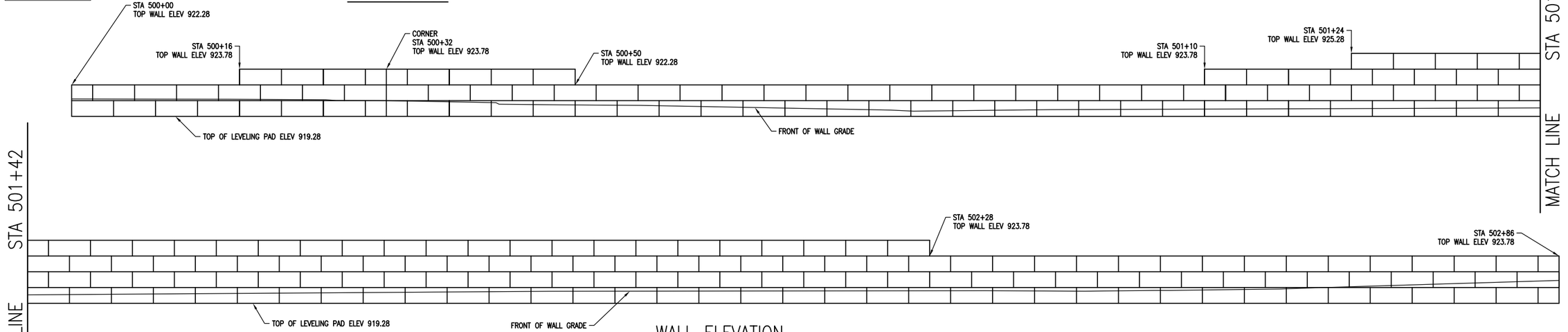
DRAWING PATH: P:\1000_1999\105318\0010_Buckner_Drive_Overpass\Drawings\Civil\Misc\180010DET.dwg Jul 09, 2018 - 10:42am

BUCKNER DRIVE

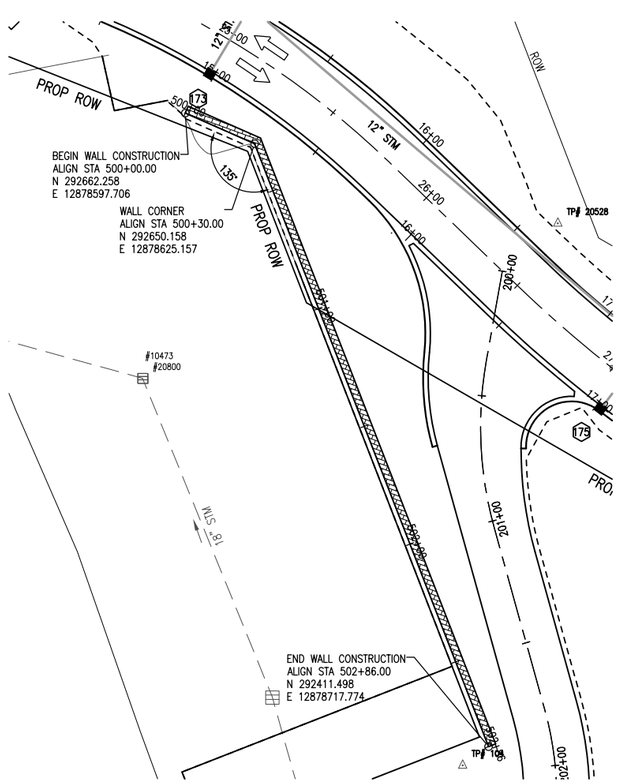
JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300 ELEV 919.06
JOB BENCHMARK #203 SET ARROW ON HYD S SIDE OF BUCKNER +/- 175' W OF TP #103 ELEV 920.43
TRAVERSE POINT #102 N 292708.63 E 12878253.15 ELEV 916.87
TRAVERSE POINT #103 N 292810.73 E 12878613.59 ELEV 918.31



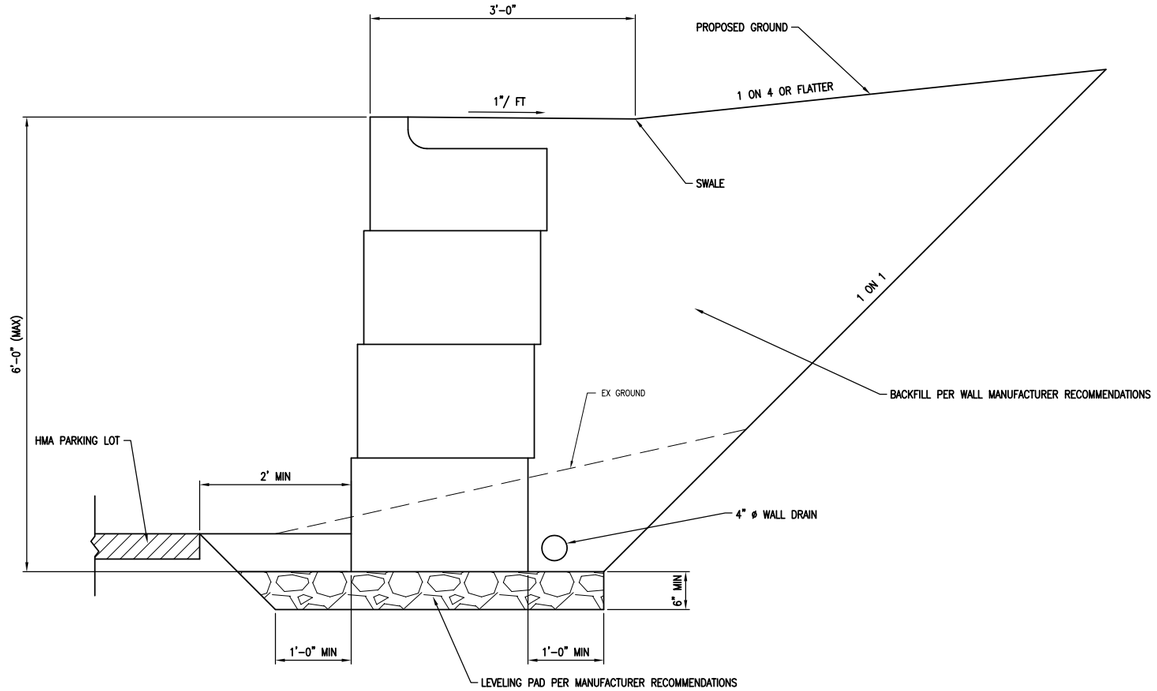
CORNER DETAIL
STA 500+32



WALL ELEVATION



WALL PLAN



WALL SECTION

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REVISIONS:

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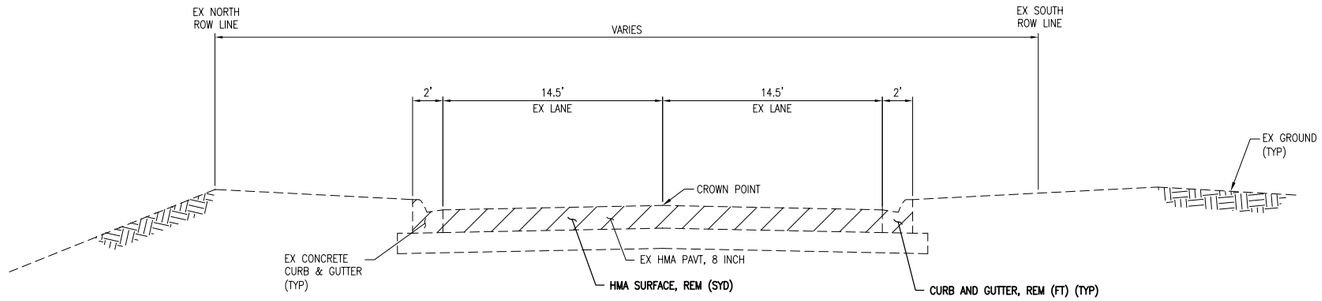
DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
Value	1053-18-0010	Value	Value	Value	Value	Value	½" = 1'-0"	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
WALL DETAILS

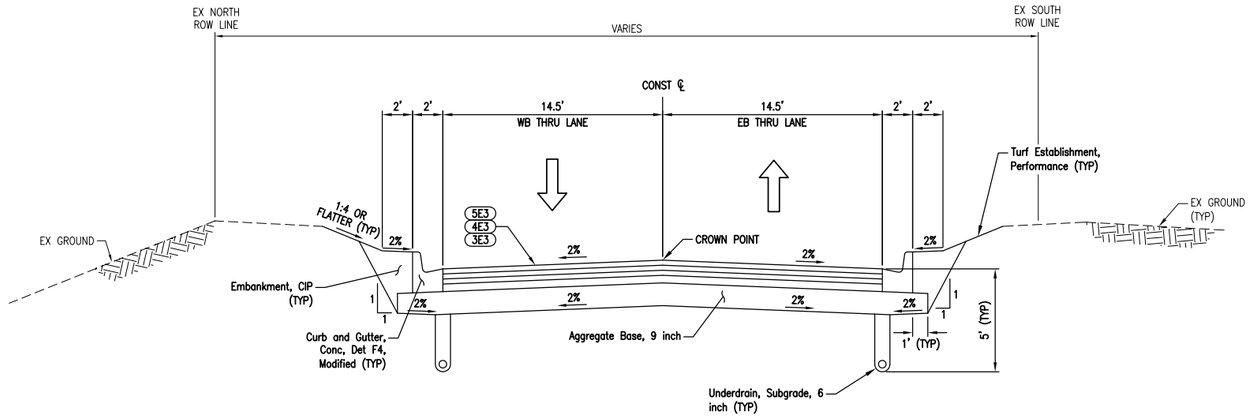
SHEET R6

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Struct\180010WALL.dwg Jul 09, 2018 - 10:42am



EXISTING CROSS SECTION HMA

STA 20+00 TO STA 24+00



PROPOSED CROSS SECTION HMA

STA 20+00 TO STA 24+00

HMA APPLICATION ESTIMATE					
MIX TYPE	ITEM DESCRIPTION	RATE OF APPL. LB/SYD	EST THICKNESS (INCHES)	PERFORMANCE GRADE	LOCATION/NOTES
HA-1	HMA Approach	770	7	64-22	DRIVEWAY: 2" HMA 5E3 OVER 2" HMA 4E3 OVER 3" HMA 3E3
HA-2	HMA Approach	990	9	64-22	DRIVEWAY: 2" HMA 5E3 OVER 2 LIFTS OF 2" HMA 4E3 OVER 3" HMA 3E3
HA-3	HMA Approach	440	4	64-22	PARKING LOT: 2 LIFTS OF 2" HMA 5E3
5E3	HMA, 5E3	220	2	64-22	TOP COURSE
4E3	HMA, 4E3	440	4	64-22	LEVELING COURSE: 2 LIFTS OF 2"
3E3	HMA, 3E3	330	3	64-22	BASE COURSE
HP	HMA BOND COAT SS-1H	VARIES			INCLUDED IN COST OF HMA ITEMS

PLACE HMA BOND COAT @ 0.10 GAL/SYD BETWEEN EXISTING PAVEMENT AND PROPOSED HMA
PLACE HMA BOND COAT @ 0.05 GAL/SYD BETWEEN PROPOSED HMA LAYERS

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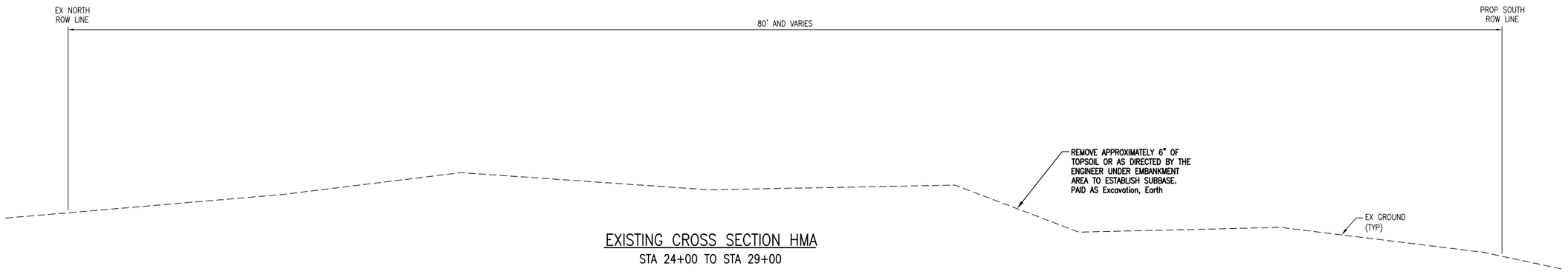
REVISIONS:

DATE: PROJ NUMBER 1053-18-0010 | ENG Value | PROJ MGR Value | CADD Value | COUNTY Value | CITY/VILLAGE/TOWNSHIP Value | SCALE H: 1"=5' V: 1" | HORZ DATUM Value | VERT DATUM Value

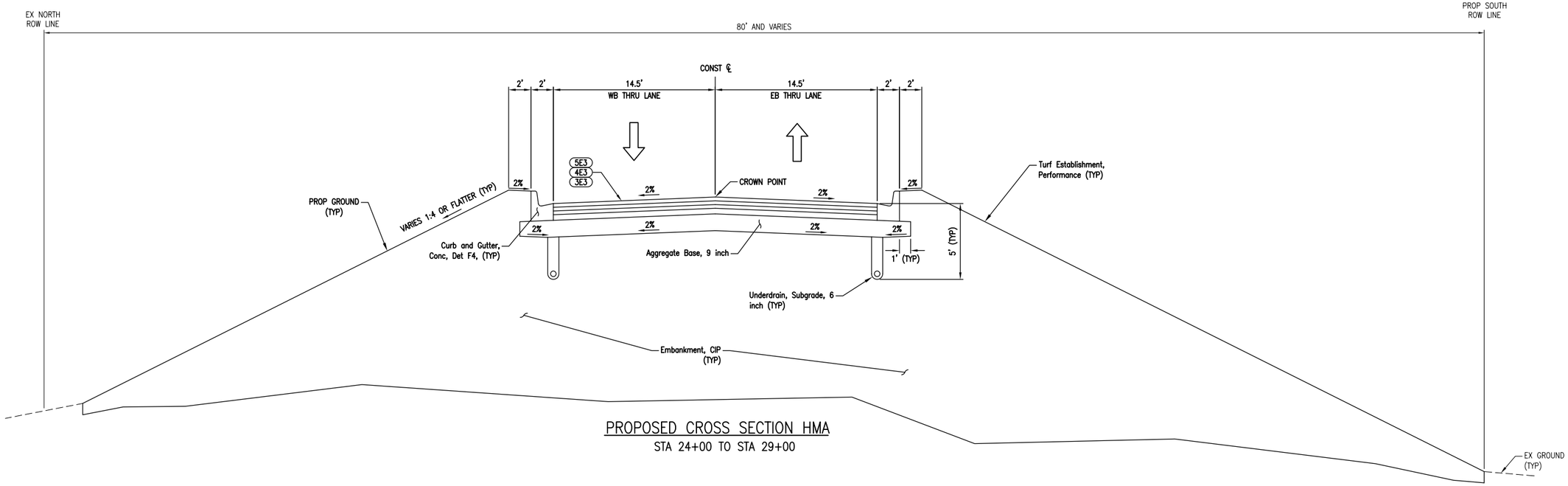
CITY OF BATTLE CREEK
BUCKNER DR
TYPICAL CROSS SECTIONS

SHEET: R7



EXISTING CROSS SECTION HMA

STA 24+00 TO STA 29+00



PROPOSED CROSS SECTION HMA

STA 24+00 TO STA 29+00

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REVISIONS:

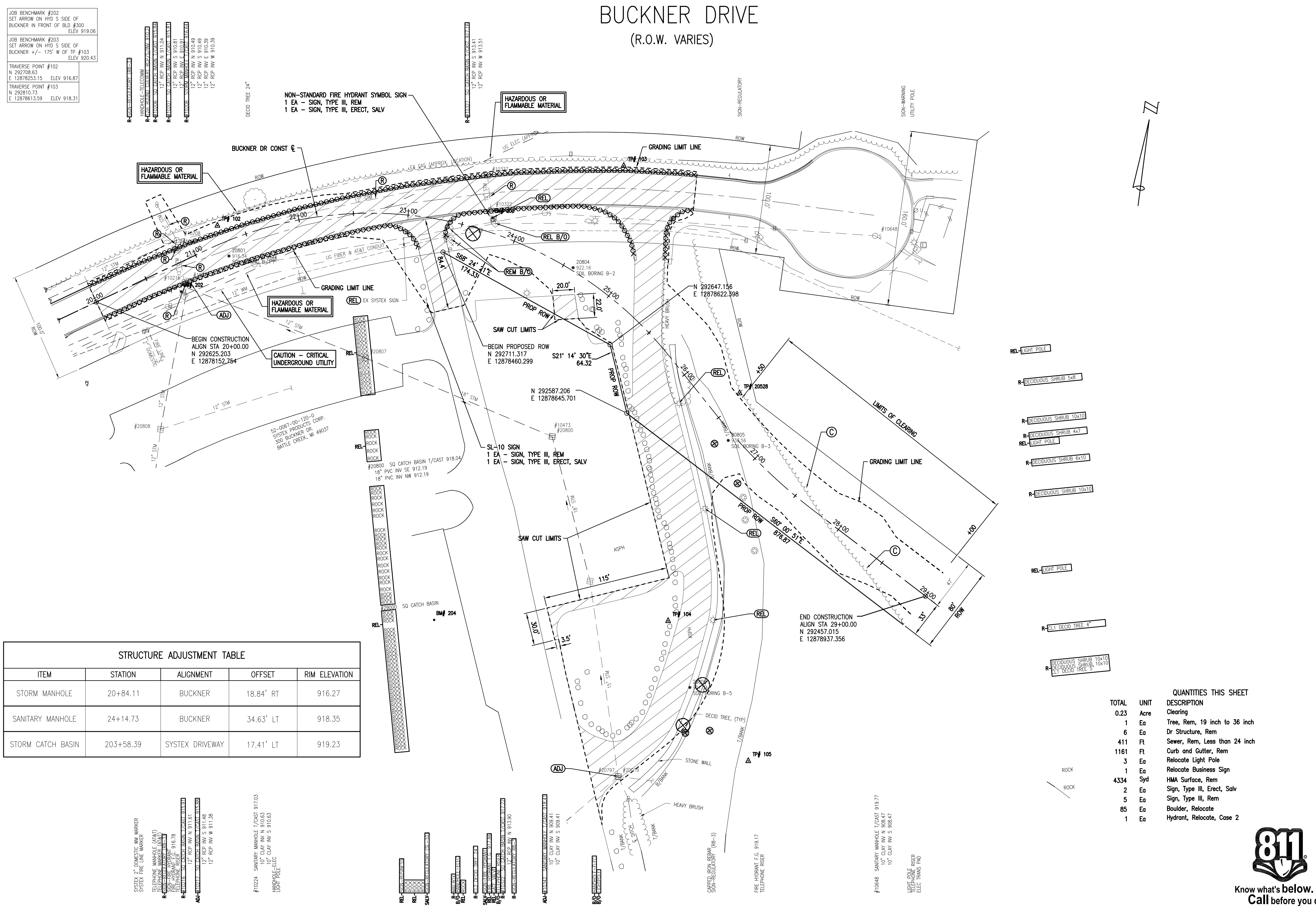
DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
	1053-18-0010	Value	Value	Value	Value	Value	H: 1"=5' V:	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
TYPICAL CROSS SECTIONS

SHEET R8

BUCKNER DRIVE

(R.O.W. VARIES)



STRUCTURE ADJUSTMENT TABLE

ITEM	STATION	ALIGNMENT	OFFSET	RIM ELEVATION
STORM MANHOLE	20+84.11	BUCKNER	18.84' RT	916.27
SANITARY MANHOLE	24+14.73	BUCKNER	34.63' LT	918.35
STORM CATCH BASIN	203+58.39	SYSTEX DRIVEWAY	17.41' LT	919.23

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
0.23	Acre	Clearing
1	Ea	Tree, Rem, 19 inch to 36 inch
6	Ea	Dr Structure, Rem
411	Ft	Sewer, Rem, Less than 24 inch
1161	Ft	Curb and Gutter, Rem
3	Ea	Relocate Light Pole
1	Ea	Relocate Business Sign
4334	Syd	HMA Surface, Rem
2	Ea	Sign, Type III, Erect, Salv
5	Ea	Sign, Type III, Rem
85	Ea	Boulder, Relocate
1	Ea	Hydrant, Relocate, Case 2

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CITY OF BATTLE CREEK

BUCKNER DR

REMOVAL PLAN

SHEET R9

DRAWING PATH: P:\1000_1999\1053180010_Buckner_Drive_Overpass\Drawings\Civil\Removal\180010REM.dwg Jul 05, 2018 - 2:30pm

BUCKNER DRIVE

(R.O.W. VARIES)

JOB BENCHMARK #202
SET ARROW ON HYD S SIDE OF
BUCKNER IN FRONT OF BLD #300
ELEV 919.06

JOB BENCHMARK #203
SET ARROW ON HYD S SIDE OF
BUCKNER +/– 175' W OF TP #103
ELEV 920.43

TRAVERSE POINT #102
N 292708.63
E 12878253.15 ELEV 916.87

TRAVERSE POINT #103
N 292810.73
E 12878613.59 ELEV 918.31

BUCKNER DR CONST ℄ ALIGNMENT CURVE DATA

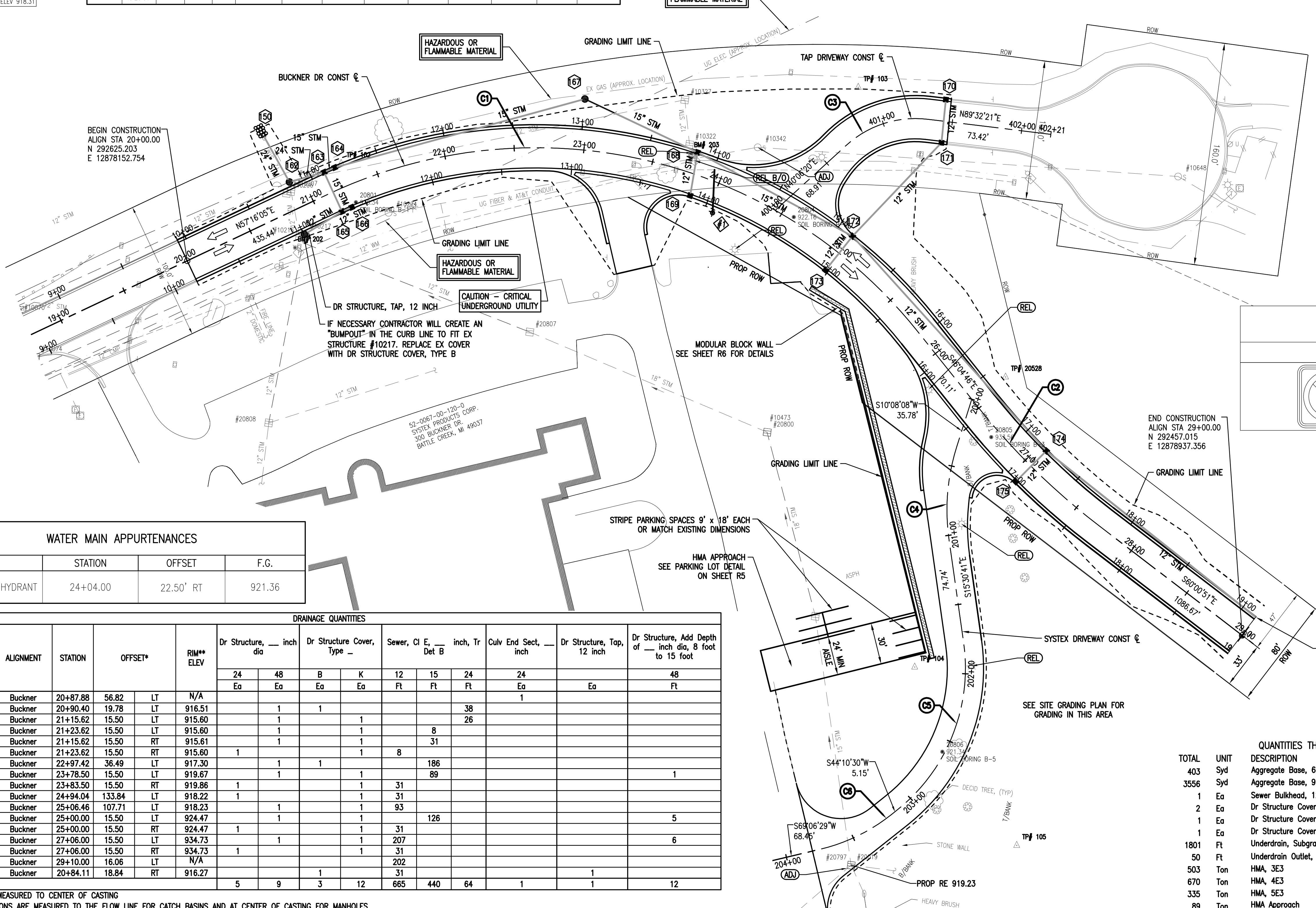
Curve #	Δ	R (Ft)	L (Ft)	T	PC STATION	NORTHING	EASTING	PI STATION	NORTHING	EASTING	PT STATION	NORTHING	EASTING
C1	76°39'32"	350.000	468.283	276.71	21+11.16	292685.31	12878246.26	23+87.87	292834.93	12878479.03	25+79.44	292642.96	12878678.32
C2	13°56'05"	500.000	121.604	61.10	26+49.56	292594.33	12878728.82	27+10.66	292551.95	12878772.84	27+71.16	292521.41	12878825.76

TAP DRIVEWAY CONST ℄ ALIGNMENT CURVE DATA

Curve #	Δ	R (Ft)	L (Ft)	T	PC STATION	NORTHING	EASTING	PI STATION	NORTHING	EASTING	PT STATION	NORTHING	EASTING
C3	49°26'01"	73.493	63.408	33.83	400+68.91	292768.35	12878610.41	401+02.74	292794.22	12878632.20	401+32.32	292794.50	12878666.03

SYSTEX DRIVEWAY CONST ℄ ALIGNMENT CURVE DATA

Curve #	Δ	R (Ft)	L (Ft)	T	PC STATION	NORTHING	EASTING	PI STATION	NORTHING	EASTING	PT STATION	NORTHING	EASTING
C4	25°38'49"	150.000	67.144	34.14	200+35.78	292564.48	12878716.94	200+69.93	292530.87	12878710.93	201+02.93	292497.97	12878720.06
C5	59°41'11"	130.000	135.424	74.58	201+77.67	292425.95	12878740.05	202+52.25	292354.08	12878759.99	203+13.09	292300.59	12878708.02
C6	24°55'59"	130.000	56.571	28.74	203+18.24	292296.90	12878704.43	203+46.98	292276.29	12878684.40	203+74.81	292266.04	12878657.55



WATER MAIN APPURTENANCES

ITEM	STATION	OFFSET	F.G.
#1 FIRE HYDRANT	24+04.00	22.50' RT	921.36

DRAINAGE QUANTITIES

STRUCTURE NUMBER	ALIGNMENT	STATION	OFFSET*		RIM** ELEV	Dr Structure, __ inch dia		Dr Structure Cover, Type _		Sewer, Cl E, __ inch, Tr Det B			Culv End Sect, __ inch	Dr Structure, Tap, 12 inch	Dr Structure, Add Depth of __ inch dia, 8 foot to 15 foot
						24	48	B	K	12	15	24	24		48
						Ea	Ea	Ea	Ea	Ft	Ft	Ft	Ea	Ea	Ft
150	Buckner	20+87.88	56.82	LT	N/A								1		
162	Buckner	20+90.40	19.78	LT	916.51		1	1				38			
163	Buckner	21+15.62	15.50	LT	915.60		1		1			26			
164	Buckner	21+23.62	15.50	LT	915.60		1		1		8				
165	Buckner	21+15.62	15.50	RT	915.61		1		1		31				
166	Buckner	21+23.62	15.50	RT	915.60	1			1	8					
167	Buckner	22+97.42	36.49	LT	917.30		1	1			186				
168	Buckner	23+78.50	15.50	LT	919.67		1		1		89				1
169	Buckner	23+83.50	15.50	RT	919.86	1			1	31					
170	Buckner	24+94.04	133.84	LT	918.22	1			1	31					
171	Buckner	25+06.46	107.71	LT	918.23		1		1	93					
172	Buckner	25+00.00	15.50	LT	924.47		1		1		126				5
173	Buckner	25+00.00	15.50	RT	924.47	1			1	31					
174	Buckner	27+06.00	15.50	LT	934.73		1		1	207					6
175	Buckner	27+06.00	15.50	RT	934.73	1			1	31					
BULKHEAD	Buckner	29+10.00	16.06	LT	N/A					202					
EX10217	Buckner	20+84.11	18.84	RT	916.27			1		31				1	
TOTALS						5	9	3	12	665	440	64	1	1	12

* OFFSETS ARE MEASURED TO CENTER OF CASTING
** RIM ELEVEVATIONS ARE MEASURED TO THE FLOW LINE FOR CATCH BASINS AND AT CENTER OF CASTING FOR MANHOLES

DRIVEWAY APPROACH QUANTITIES – THIS SHEET

STATION			DRIVEWAY TYPE	PROPOSED DRIVEWAY SLOPE	Aggregate Base, 9 inch	HMA Approach		Curb and Gutter, Conc, Det M	Curb and Gutter, Conc, Det F4
				%	Syd	Ton		Ft	Ft
23+32	Buckner	R	Commercial	– 3.8	326	101	(HA–1)	104	138
24+50	Buckner	L	Commercial	– 4.6	612	253	(HA–2)	111	274
26+50	Buckner	R	Commercial	– 4.3	1416	513	(HA–1)	129	111
TOTAL					2354	867		344	523

PERMANENT SIGNING

SIGN	SIGN DESIGNATION	SIZE	NUMBER REQUIRED	AREA (SQ. FT)	TOTAL (SQ. FT)
(No parking symbol)	R8–3	12"	6*	1	6

* PLACE PROPOSED R8–3 SIGNS AT THE FOLLOWING LOCATIONS:
- STA 20+66 LT – 14 FT POST, STEEL, 3 LB
- STA 20+66 RT – 14 FT POST, STEEL, 3 LB
- STA 23+70 LT – 14 FT POST, STEEL, 3 LB
- STA 23+70 RT – 14 FT POST, STEEL, 3 LB
- STA 26+70 LT – 14 FT POST, STEEL, 3 LB
- STA 26+70 RT – 14 FT POST, STEEL, 3 LB

PLACE SALVAGED NON STANDARD FIRE HYDRANT SYMBOL SIGN (SEE REMOVAL SHEET FOR REMOVAL QUANTITIES) AT THE FOLLOWING LOCATION:
- STA 24+04 RT – 14 FT POST, STEEL, 3 LB

PLACE SALVAGED R2–1(10) SPEED LIMIT 10 SIGN (SEE REMOVAL SHEET FOR REMOVAL QUANTITIES) AT THE FOLLOWING LOCATION:
- STA 23+30.5, 73.78' RT – 14 FT POST, STEEL, 3 LB

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
403	Syd	Aggregate Base, 6 inch
3556	Syd	Aggregate Base, 9 inch
1	Ea	Sewer Bulkhead, 12 inch
2	Ea	Dr Structure Cover, Adj, Case 1
1	Ea	Dr Structure Cover, Adj, Case 2
1	Ea	Dr Structure Cover, Type B
1801	Ft	Underdrain, Subgrade, 6 inch
50	Ft	Underdrain Outlet, 6 inch
503	Ton	HMA, 3E3
670	Ton	HMA, 4E3
335	Ton	HMA, 5E3
89	Ton	HMA Approach
1460	Ft	Curb and Gutter, Conc, Det F4
1	Ea	Post, Mailbox
112	Ft	Post, Steel, 3 lb
6	Sft	Sign, Type IIIB
187	Ft	Pavt Mrkg, Waterborne, for Rest Areas, Parks, & Lots, 4 inch, Yellow
12	Syd	Riprap, Plain
1329	Sft	Modular Block Wall
5563	Syd	Turf Establishment, Performance

811 Know what's **below.** **Call** before you dig.

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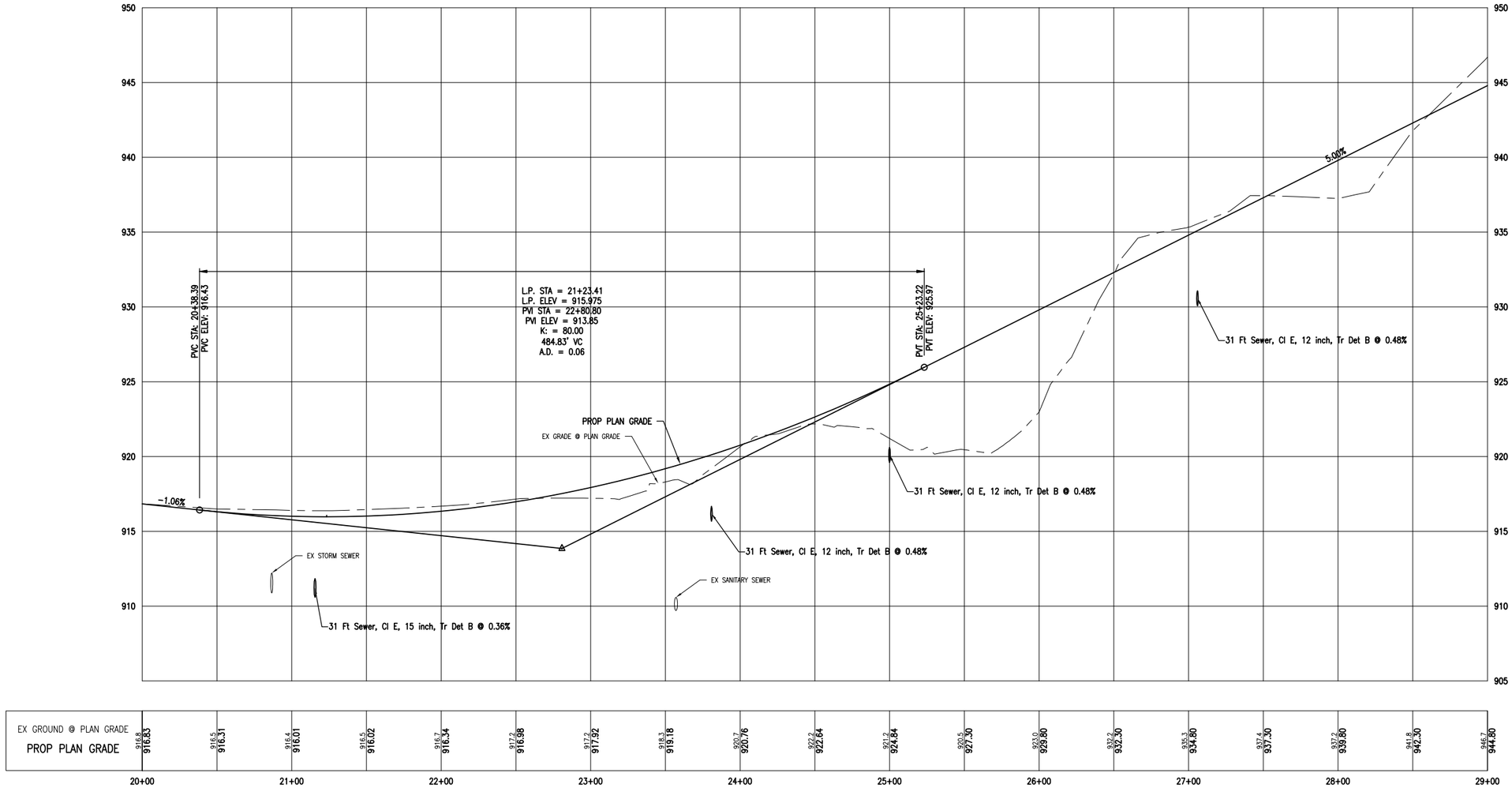
Value	1053-18-0010	Value	Value	Value	Value	Value	H: 1"=40' V: 1"=4'	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
CONSTRUCTION PLAN

SHEET R10

DRAWING PATH: P:\1000_1999\1053180010_Buckner_Drive_Overpass\Drawings\Civil\Plans_Const\180010CON.dwg Jul 09, 2018 - 11:44am



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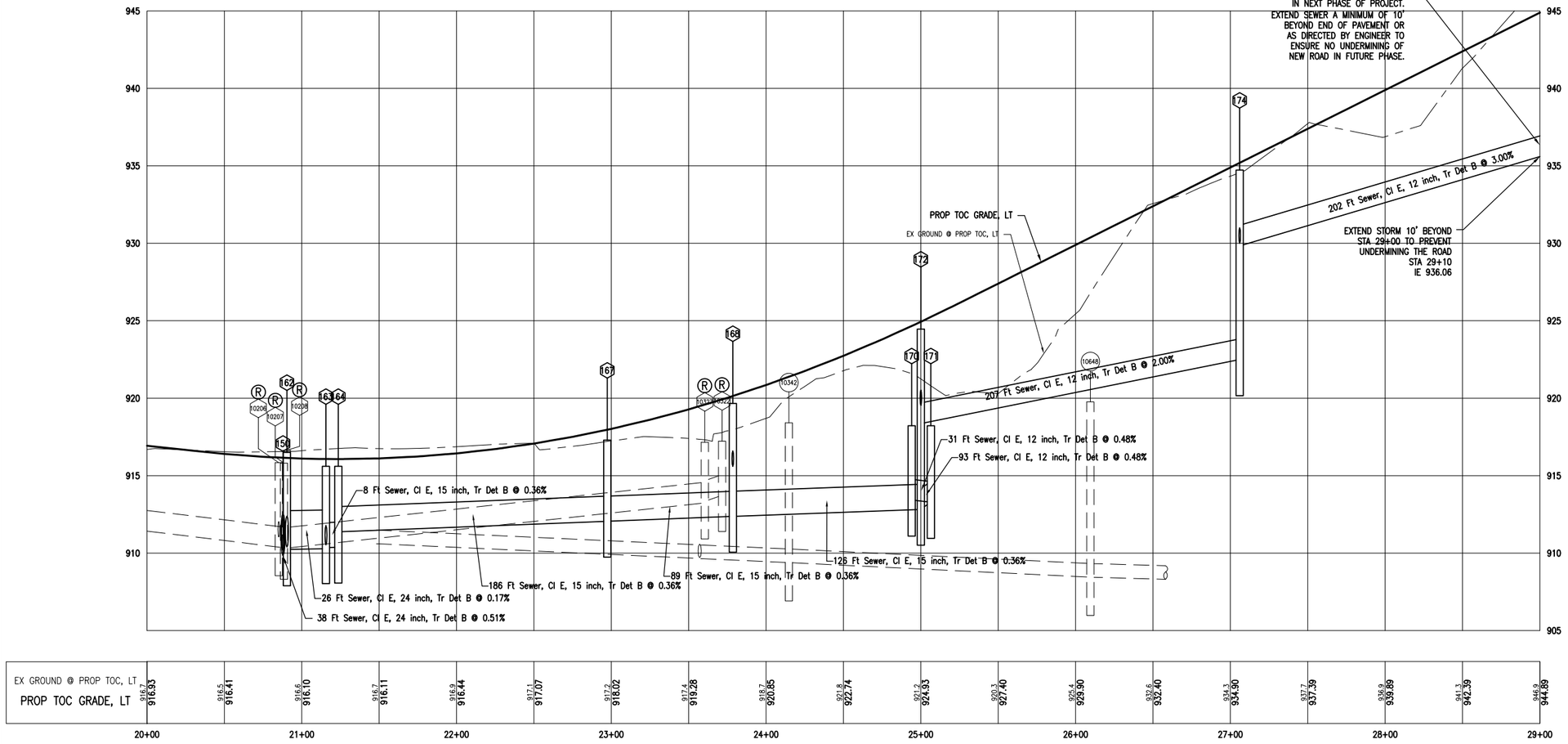
Value	103-19-0010	Value	Value	Value	Value	Value	Ht: 1"=50' Vt:	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
PROFILE (CENTER)

SHEET R11

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Profiles\180010PRF.dwg Jul 05, 2018 - 2:31pm



(R) 10208 STA 20+85.14, 13.2' L
48 inch Cylindrical Structure
T/CAST 915.84
12" INV NE 911.04

(R) 10207 STA 20+88.48, 13.1' L
48 inch Cylindrical Structure
T/CAST 915.81
12" INV SE 910.81
12" INV SW 910.81
12" INV N 910.84

(R) 10208 STA 20+90.40, 19.8' L
48 inch Cylindrical Structure
T/CAST 916.64
12" INV S 910.39
12" INV SW 910.49
12" INV E 910.49
12" INV NW 910.39

(R) 10322 STA 23+71.60, 19.1' L
48 inch Cylindrical Structure
T/CAST 917.22
12" INV N 913.90

(R) 10327 STA 23+60.43, 48.9' L
48 inch Cylindrical Structure
T/CAST 917.16
12" INV S 913.51
12" INV W 913.41

10342 STA 24+14.73, 34.6' L
48 inch Cylindrical Structure
T/CAST **918.37**
10" INV W 909.41
10" INV E 909.41

10648 STA 26+09.53, 215.2' L
48 inch Cylindrical Structure
T/CAST 919.77
10" INV W 908.47
10" INV SE 908.47

150 **STA 20+87.88, 56.8' L**
Culv End Sect, 24 inch

24" INV SE 910.20

162 **STA 20+90.40, 19.8' L**
Dr Structure, 48 inch dia, Cover B
T/CAST 916.51
24" INV NE 910.49
24" INV NW 910.39

163 **STA 21+15.62, 15.5' L**
Dr Structure, 48 inch dia, Cover K
T/CAST 915.60
15" INV NE 910.54
24" INV SW 910.54
15" INV SE 910.54

164 **STA 21+23.62, 15.5' L**
Dr Structure, 48 inch dia, Cover K
T/CAST 915.60
15" INV NE 911.56
15" INV SW 910.56

167 **STA 22+97.42, 36.5' L**
Dr Structure, 48 inch dia, Cover B
T/CAST 917.30
15" INV E 912.24
15" INV SW 912.24

168 **STA 23+78.50, 15.5' L**
Dr Structure, 48 inch dia, Cover K
T/CAST 919.67
12" INV S 915.60
15" INV E 912.56
15" INV W 912.56

170 **STA 24+94.04, 133.8' L**
Dr Structure, 24 inch dia, Cover K
T/CAST 918.22
12" INV S 913.60

171 **STA 25+06.46, 107.7' L**
Dr Structure, 48 inch dia, Cover K
T/CAST 918.23
12" INV N 913.45
12" INV SW 913.45

172 **STA 25+00.00, 15.5' L**
Dr Structure, 48 inch dia, Cover K
T/CAST 924.47
12" INV SE 918.53
15" INV W 913.01
12" INV NE 913.01
12" INV SW 919.53

174 **STA 27+06.00, 15.5' L**
Dr Structure, 48 inch dia, Cover K
T/CAST 934.73
12" INV SE 930.00
12" INV NW 922.66
12" INV SW 930.00

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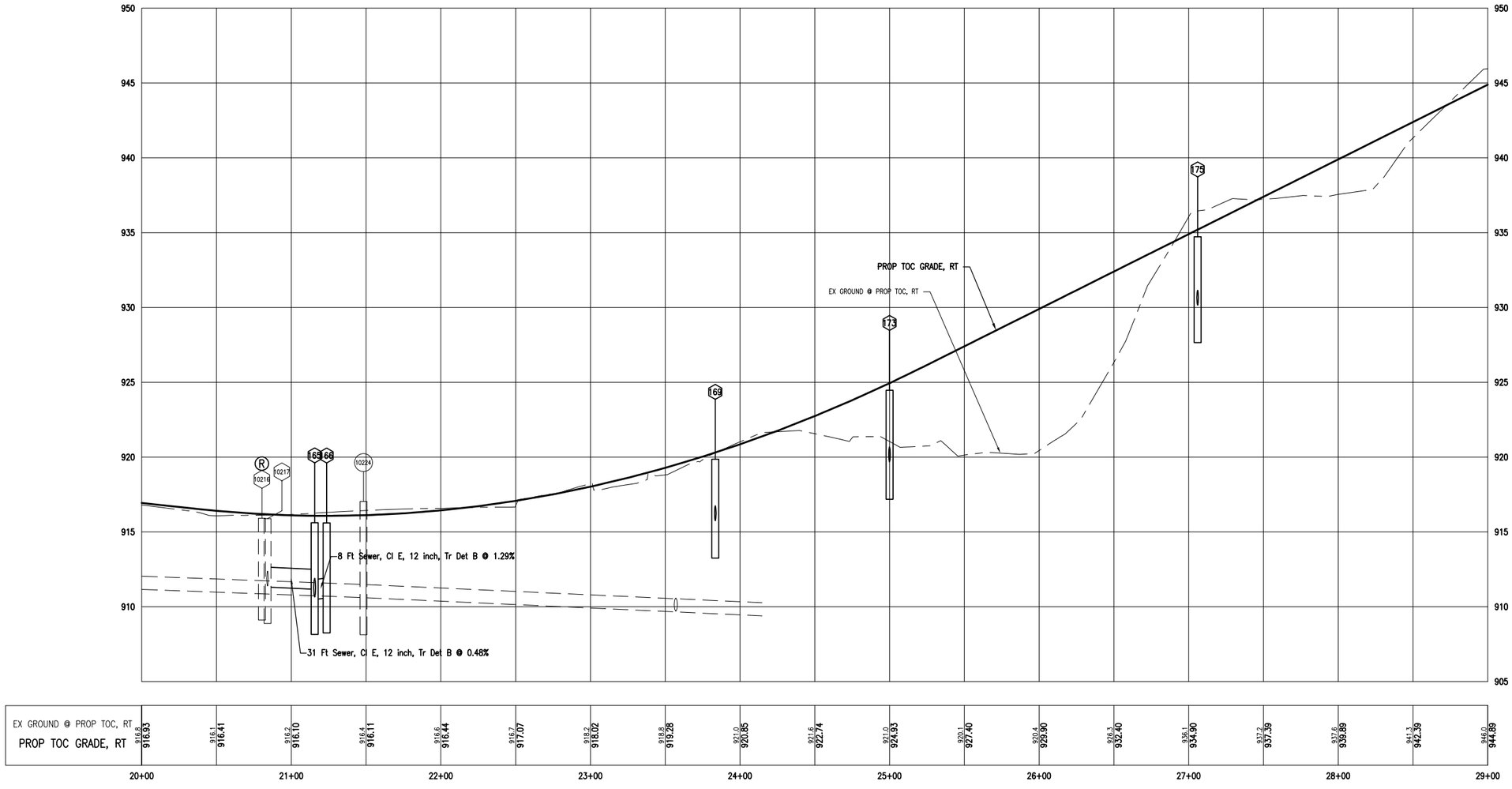
HORIZ DATUM | VERT DATUM
Value | Value

DATE | PROJ NUMBER | ENG | PROJ MGR | CADD | COUNTY | CITY/VILLAGE/TOWNSHIP | SCALE | H: 1"=50' | V:
Value | 1053-18-0010 | Value | Value | Value | Value | Value | Value

CITY OF BATTLE CREEK
BUCKNER DR
PROFILE (LEFT)

SHEET R12

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Profiles\180010PRF.dwg Jul 05, 2018 - 2:31pm



R
10216 STA 20+80.38, 18.5' R
48 inch Cylindrical Structure
T/CAST 915.91
12" INV NE 911.61

10217 STA 20+84.11, 18.8' R
48 inch Cylindrical Structure **COVER B**
T/CAST **916.32**
12" INV SW 911.48
B 12" INV NW 911.38
12" INV NE 911.48

10224 STA 21+48.30, 28.7' R
48 inch Cylindrical Structure
T/CAST 917.03
10" INV SW 910.63
10" INV E 910.63

165 **STA 21+15.62, 15.5' R**
Dr Structure, 48 inch dia, Cover K
T/CAST 915.61
12" INV NE 910.65
15" INV NW 910.65
12" INV SW 911.33

166 **STA 21+23.62, 15.5' R**
Dr Structure, 24 inch dia, Cover K
T/CAST 915.60
12" INV SW 910.75

169 **STA 23+83.50, 15.5' R**
Dr Structure, 24 inch dia, Cover K
T/CAST 919.86
12" INV N 915.75

173 **STA 25+00.00, 15.5' R**
Dr Structure, 24 inch dia, Cover K
T/CAST 924.47
12" INV NE 919.68

175 STA 27+06.00, 15.5' R
Dr Structure, 24 inch dia, Cover K
T/CAST 934.73
12" INV NE 930.15

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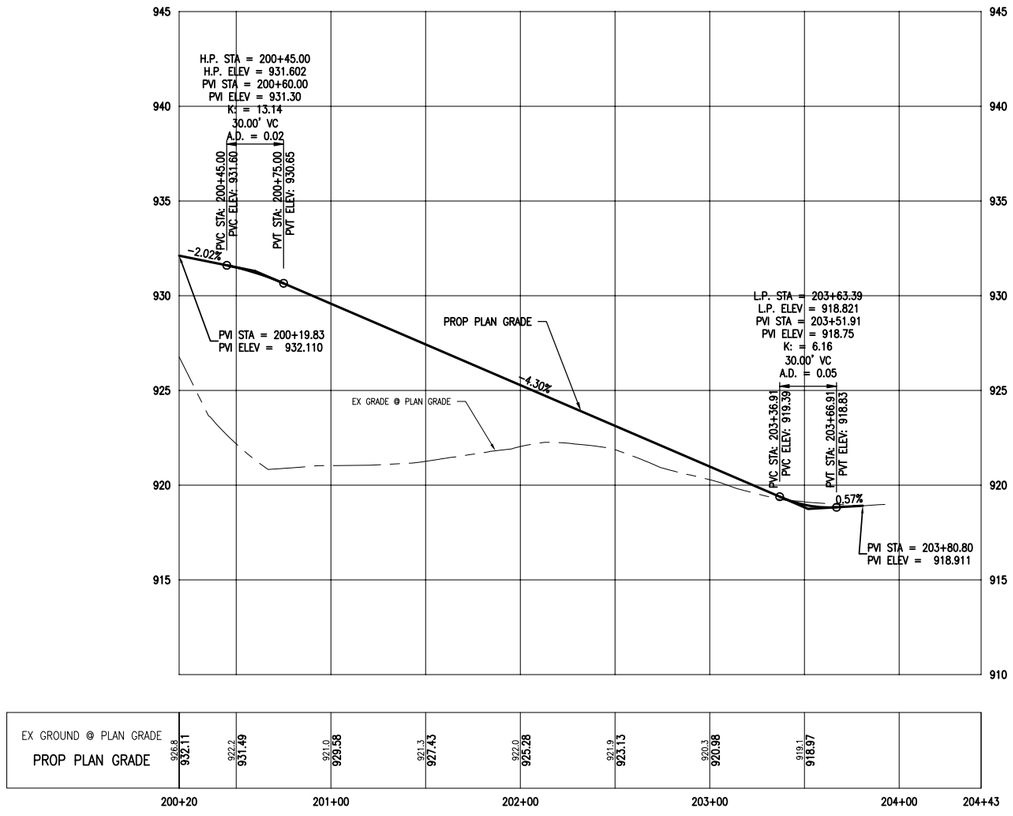
Value	0053-15-0010	Value	Value	Value	Value	Value	H: 1"=50' V:	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
PROFILE (RIGHT)

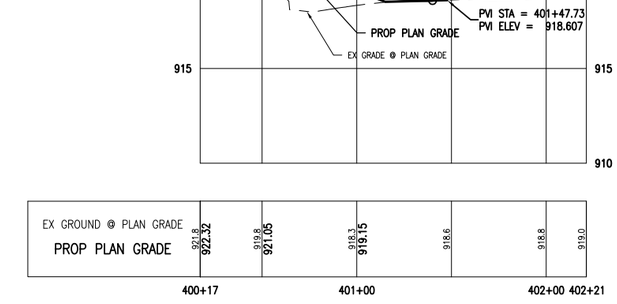
SHEET R13

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\ProfileS180010PRF.dwg Jul 05, 2018 - 2:31pm

SYSTEX DRIVEWAY PROFILE



TAP DRIVEWAY PROFILE



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HORIZ DATUM: Value | VERT DATUM: Value

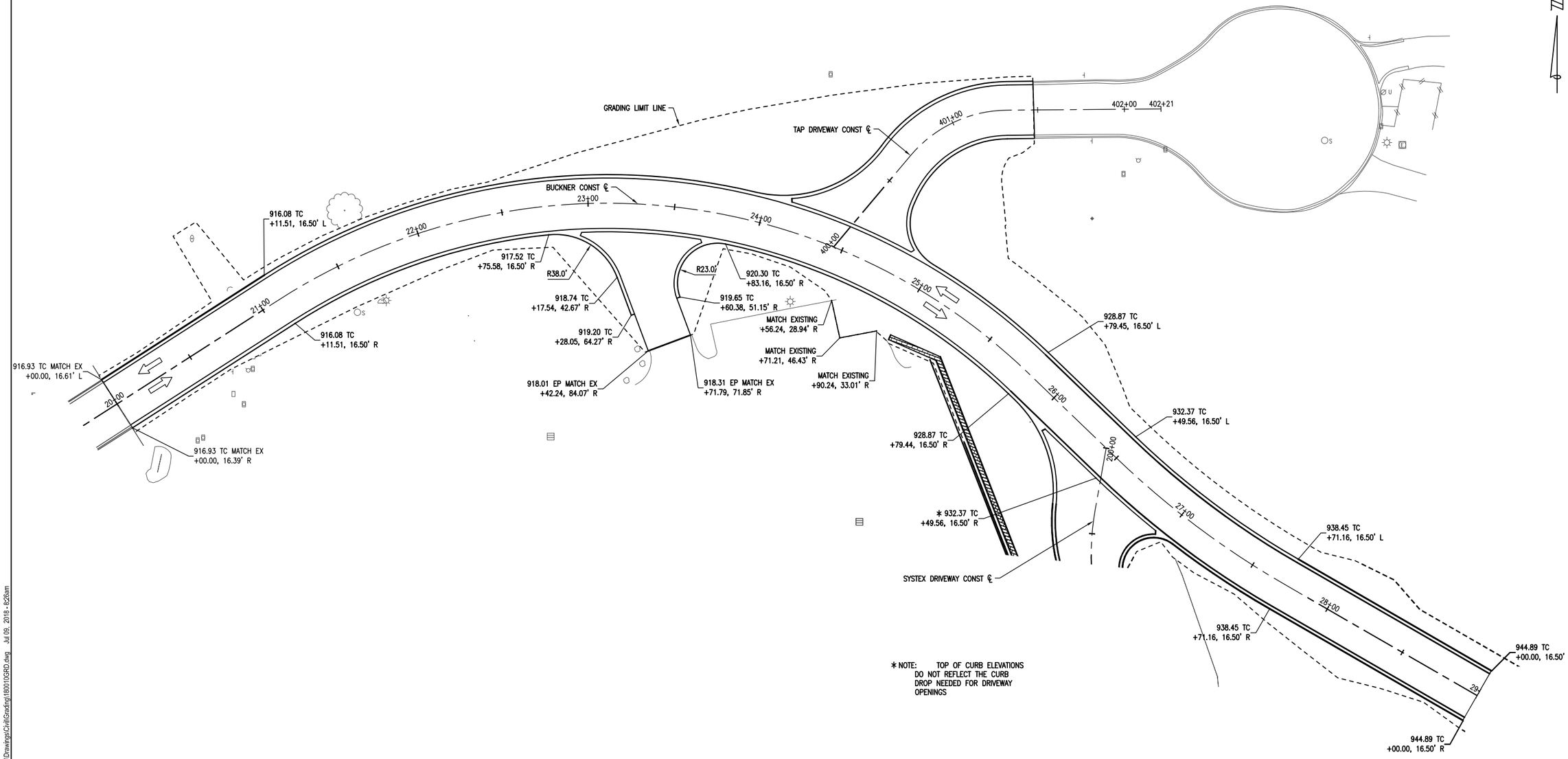
DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	
Value	1850-18-0010	Value	Value	Value	Value	Value	H: 1"=30'	V:

CITY OF BATTLE CREEK
BUCKNER DR
DRIVEWAY PROFILES

SHEET R14

DRAWING PATH: P:\1000_1999\1053180010_Buckner_Drive_Overpass\Drawings\Civil\Profiles\180010PRF.dwg Jul 05, 2018 - 2:31pm

BUCKNER DRIVE
(R.O.W. VARIES)



* NOTE: TOP OF CURB ELEVATIONS DO NOT REFLECT THE CURB DROP NEEDED FOR DRIVEWAY OPENINGS

N

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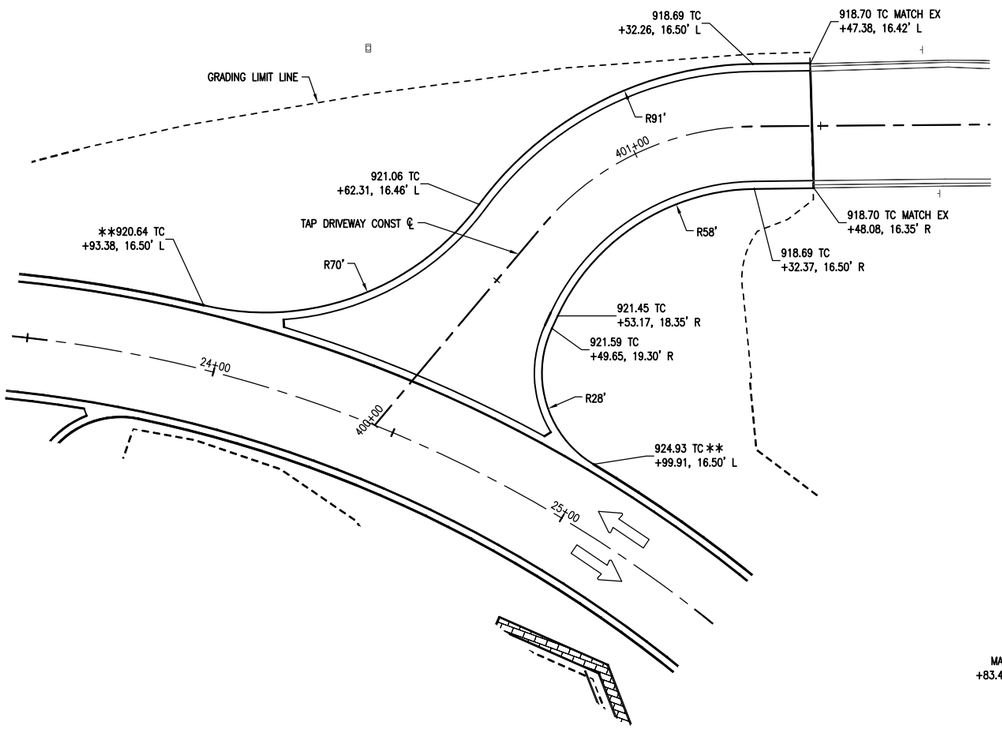
Value	1053-16-0010	Value	Value	Value	Value	Value	H:	1"=40'	Value	Value
							V:	1"=4'		

CITY OF BATTLE CREEK
BUCKNER DR
DETAIL GRADING

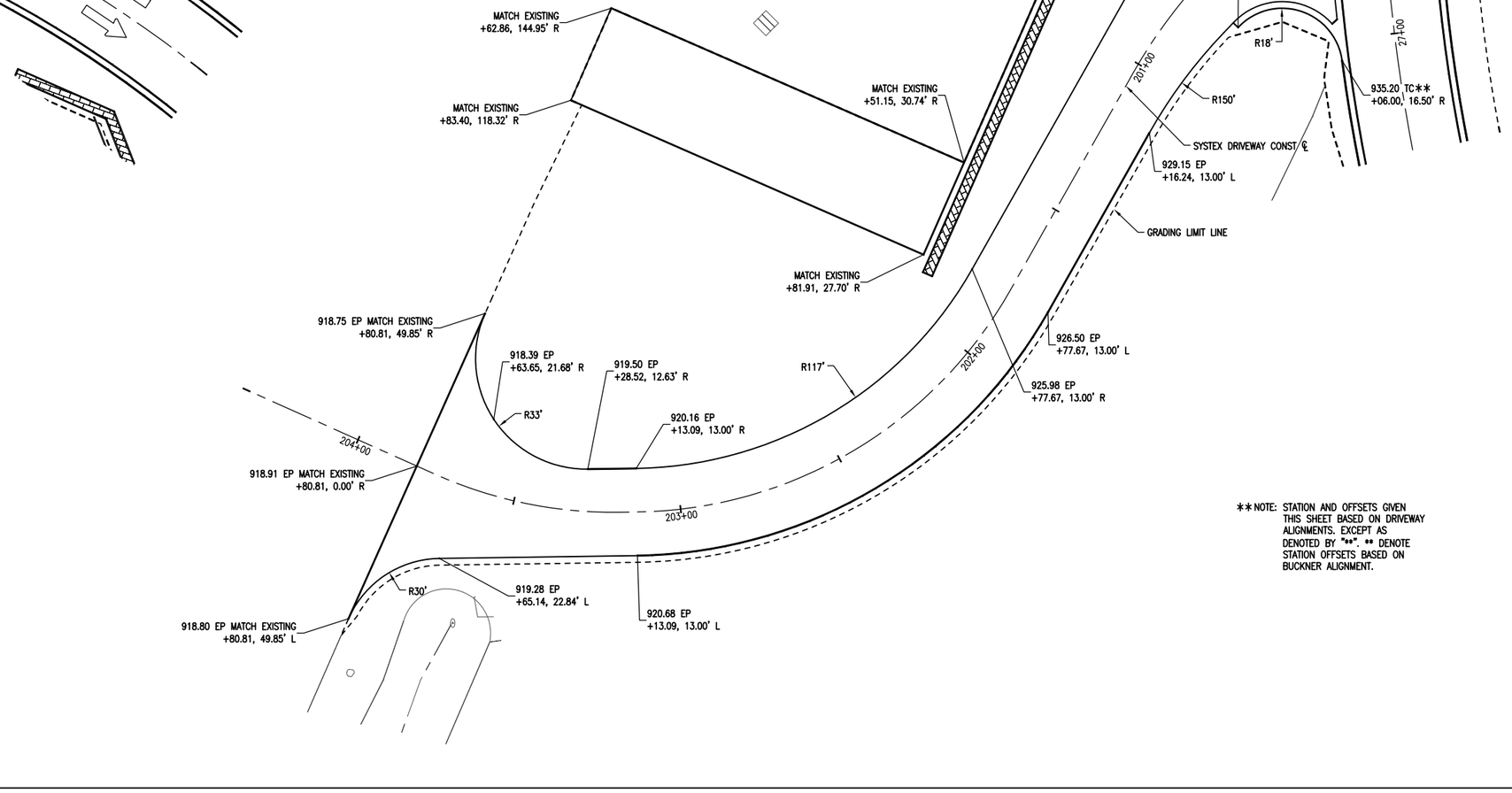
SHEET R15

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Grading\180010GRD.dwg Jul 09, 2018 - 8:26am

TAP DRIVEWAY



SYSTEX DRIVEWAY



** NOTE: STATION AND OFFSETS GIVEN THIS SHEET BASED ON DRIVEWAY ALIGNMENTS. EXCEPT AS DENOTED BY "**". ** DENOTE STATION OFFSETS BASED ON BUCKNER ALIGNMENT.

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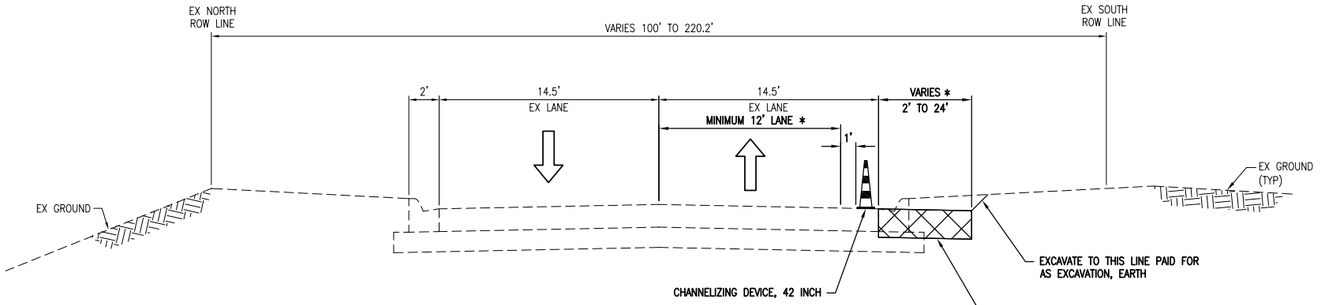
Value	1005-040010	Value	Value	Value	Value	Value	H: 1"=40' V: 1"=4'	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
DETAIL GRADING

SHEET R16

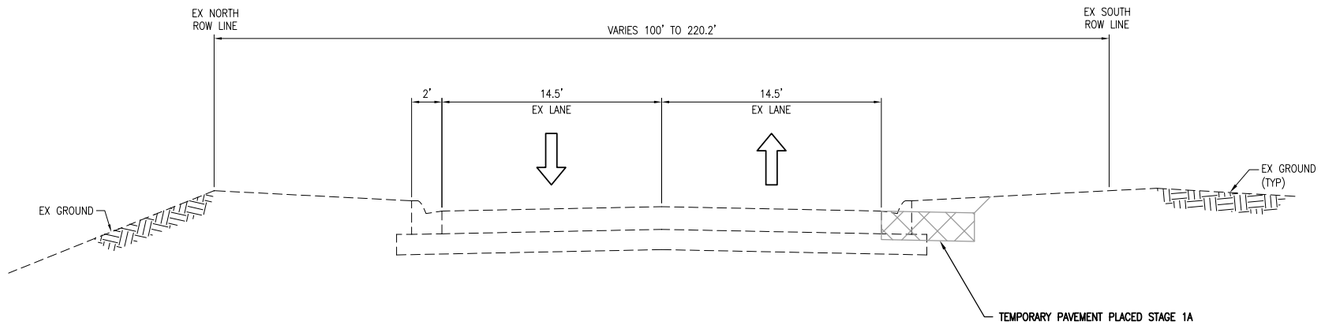
DRAWING PATH: P:\1000_1999\1053\80010_Buckner_Drive_Overpass\Drawings\Civil\Grading\180010GRD.dwg Jul 09, 2018 - 8:24am



PRESTAGE 1A EX ROAD – TYPICAL SECTION

STA 20+00 TO STA 25+00±

* STA 22+00± TO STA 23+00±



STAGE 1 EX ROAD – TYPICAL SECTION

STA 20+00 TO STA 23+00±

TEMPORARY PAVEMENT PLACED THIS STAGE

TEMPORARY PAVEMENT PLACED PREVIOUS STAGE

PERMANENT WORK PLACED THIS STAGE

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Stage1\180010STGTYP.dwg Jul 05, 2018 - 2:31pm

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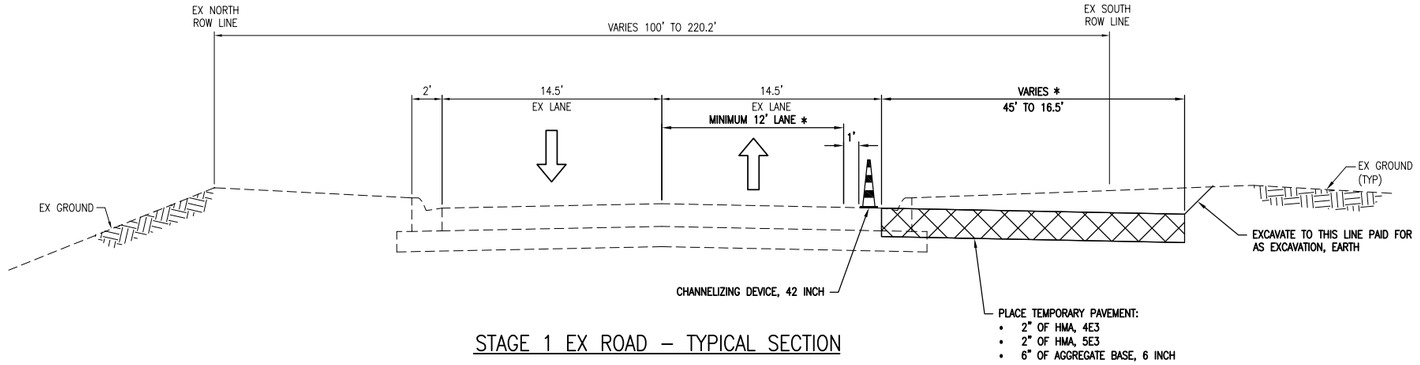
	1053-13-0010	Value	Value	Value	Value	Value	H: 1"=5' V:	Value	Value

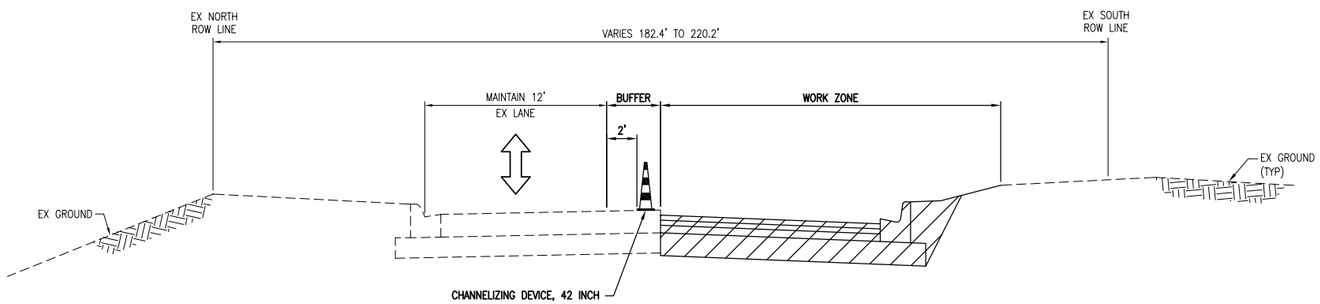
CITY OF BATTLE CREEK
BUCKNER DR
STAGE 1 TYPICALS

SHEET R17



STAGE 1 EX ROAD – TYPICAL SECTION

STA 23+00± TO STA 24+50±
*STA 23+00± TO STA 23+75±



STAGE 1 TAP DRIVEWAY – TYPICAL SECTION

STA 24+50± LT TO STA 25+00± LT

TEMPORARY PAVEMENT PLACED THIS STAGE

TEMPORARY PAVEMENT PLACED PREVIOUS STAGE

PERMANENT WORK PLACED THIS STAGE

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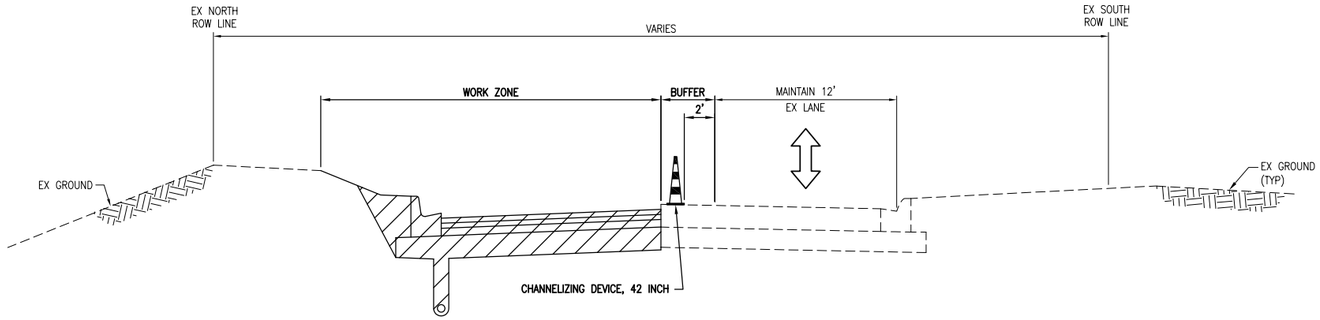
ENG Value
PROJ MGR Value
CADD Value
COUNTY Value
CITY/VILLAGE/TOWNSHIP Value
SCALE Value
H: 1"=5'
V:
HORZ DATUM Value
VERT DATUM Value

CITY OF BATTLE CREEK
BUCKNER DR
STAGE 1 TYPICALS

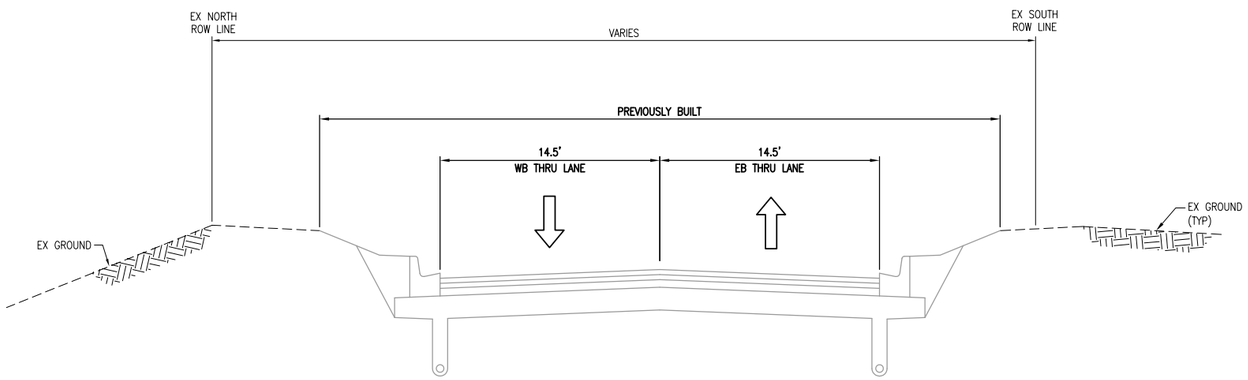
SHEET R18

DRAWING PATH: P:\1000_1999\105318\0010_Buckner_Drive_Overpass\Drawings\Civil\Stage1\180010STGTYP.dwg Jul 05, 2018 - 2:31pm



STAGE 2 – TYPICAL SECTION

STA 20+00 TO STA 24+25±



STAGE 2 – TYPICAL SECTION

STA 24+25 TO STA 29+00

PERMANENT WORK PLACED THIS STAGE

DRAWING PATH: P:\1000_1999\105318\0010_Buckner_Drive_Overpass\Drawings\Civil\Stage1\180110STGTYP.dwg Jul 05, 2018 - 2:31pm

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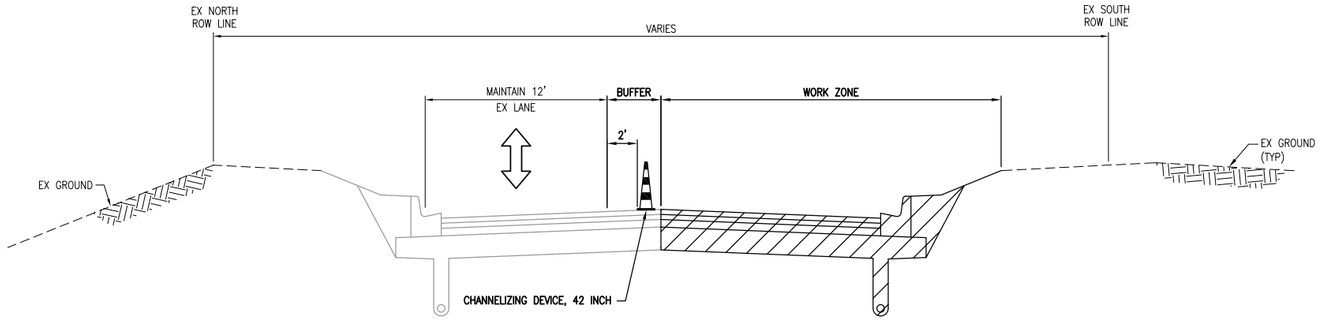
REVISIONS:

DATE
PROJ NUMBER 105318-0010
ENG Value
PROJ MGR Value
CADD Value
COUNTY Value
CITY/VILLAGE/TOWNSHIP Value
SCALE 1"= 1'=5 1c:
HORZ DATUM Value
VERT DATUM Value

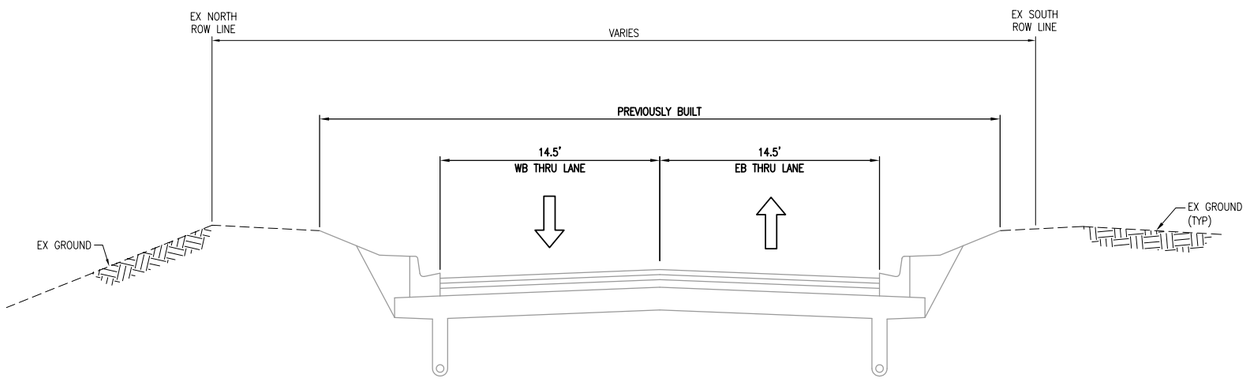
CITY OF BATTLE CREEK
BUCKNER DR
STAGE 2 TYPICALS

SHEET R19



STAGE 3 – TYPICAL SECTION

STA 20+00 TO STA 24+25



STAGE 3 – TYPICAL SECTION

STA 24+25 TO STA 29+00

STAGE 4: TYPICAL NOT SHOWN
PAVE THE TOP COURSE UNDER FLAG CONTROL

PERMANENT WORK PLACED THIS STAGE

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Stage\180010STGTYP.dwg Jul 05, 2018 - 2:31pm

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	1053-18-0010	Value	Value	Value	Value	Value	H: 1"=5' V:	Value	Value

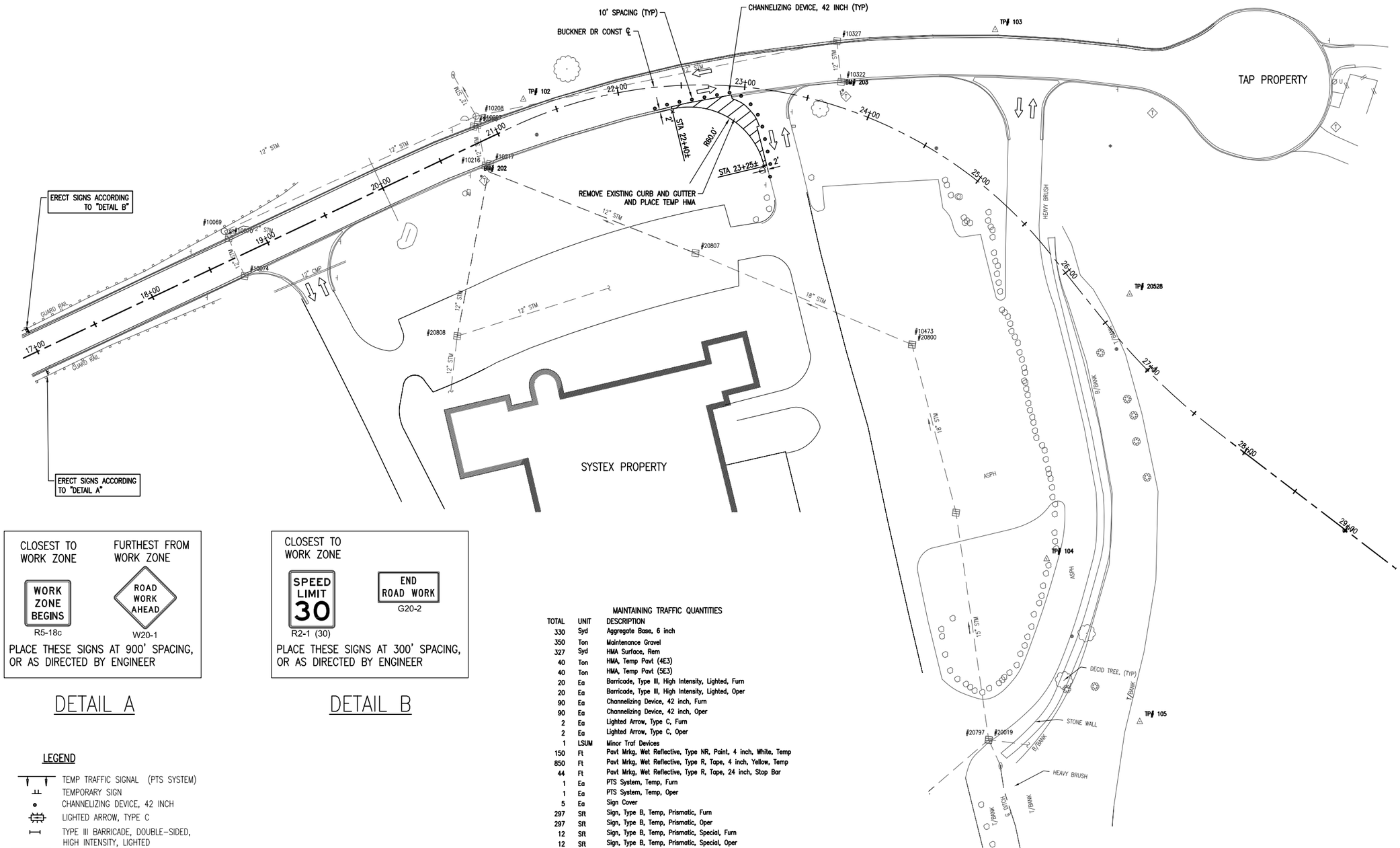
CITY OF BATTLE CREEK
BUCKNER DR
STAGE 3 TYPICALS

SHEET R20

BUCKNER DRIVE

(R.O.W. VARIES)

JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300 ELEV 919.06
JOB BENCHMARK #203 SET ARROW ON HYD S SIDE OF BUCKNER +/- 175' W OF TP #103 ELEV 920.43
TRAVERSE POINT #102 N 292708.63 E 1287825315 ELEV 916.87
TRAVERSE POINT #103 N 292810.73 E 1287861359 ELEV 918.31



CLOSEST TO WORK ZONE	FURTHEST FROM WORK ZONE
WORK ZONE BEGINS R5-18c	ROAD WORK AHEAD W20-1

PLACE THESE SIGNS AT 900' SPACING, OR AS DIRECTED BY ENGINEER

DETAIL A

CLOSEST TO WORK ZONE	
SPEED LIMIT 30 R2-1 (30)	END ROAD WORK G20-2

PLACE THESE SIGNS AT 300' SPACING, OR AS DIRECTED BY ENGINEER

DETAIL B

LEGEND

- TEMP TRAFFIC SIGNAL (PTS SYSTEM)
- TEMPORARY SIGN
- CHANNELIZING DEVICE, 42 INCH
- LIGHTED ARROW, TYPE C
- TYPE III BARRICADE, DOUBLE-SIDED, HIGH INTENSITY, LIGHTED
- WORK ZONE
- TEMP HMA PAVT PLACED PREVIOUS STAGES

MAINTAINING TRAFFIC QUANTITIES

TOTAL	UNIT	DESCRIPTION
330	Syd	Aggregate Base, 6 inch
350	Ton	Maintenance Gravel
327	Syd	HMA Surface, Rem
40	Ton	HMA, Temp Pavt (4E3)
40	Ton	HMA, Temp Pavt (5E3)
20	Ea	Barricade, Type III, High Intensity, Lighted, Furn
20	Ea	Barricade, Type III, High Intensity, Lighted, Oper
90	Ea	Channelizing Device, 42 inch, Furn
90	Ea	Channelizing Device, 42 inch, Oper
2	Ea	Lighted Arrow, Type C, Furn
2	Ea	Lighted Arrow, Type C, Oper
1	LSUM	Minor Traf Devices
150	Ft	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, White, Temp
850	Ft	Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, Yellow, Temp
44	Ft	Pavt Mrkg, Wet Reflective, Type R, Tape, 24 inch, Stop Bar
1	Ea	PTS System, Temp, Furn
1	Ea	PTS System, Temp, Oper
5	Ea	Sign Cover
297	Sft	Sign, Type B, Temp, Prismatic, Furn
297	Sft	Sign, Type B, Temp, Prismatic, Oper
12	Sft	Sign, Type B, Temp, Prismatic, Special, Furn
12	Sft	Sign, Type B, Temp, Prismatic, Special, Oper
1	LSUM	Traf Regulator Control
1	Ea	Driveway Assistance Device, Portable, Temporary

Know what's **below.** **Call** before you dig.

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
Value	1053-140070	Value	Value	Value	Value	Value	1"=40'	Value	Value

CITY OF BATTLE CREEK

BUCKNER DR

PRE STAGE 1A

SHEET R21

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Stage1\180010STGPRE1.dwg Jul 05, 2018 - 3:50pm

BUCKNER DRIVE

(R.O.W. VARIES)

JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300 ELEV 919.06
JOB BENCHMARK #203 SET ARROW ON HYD S SIDE OF BUCKNER +/- 175' W OF TP #103 ELEV 920.43
TRAVERSE POINT #102 N 292708.63 E 12878253.15 ELEV 916.87
TRAVERSE POINT #103 N 292810.73 E 1287863.59 ELEV 918.31

USE A STEEL PLATE TO COVER TRENCHES ADJACENT TO ACTIVE TRAFFIC AT THE END OF EACH WORK DAY. STEEL PLATE INCLUDED IN MINOR TRAF DEVICES.

BUILD PROPOSED CURB SHOWN AND USE MAINTENANCE GRAVEL TO MAINTAIN DRIVEWAY IN STAGE 2.

ONE LANE ROAD AHEAD
W20-4

ONE LANE ROAD AHEAD
W20-4

BUCKNER DR CONST ℄

TP# 103

TP# 102

TP# 202

TP# 203

TP# 20528

TP# 105

#10327

#10322

#10208

#10209

#10216

#10217

#10069

#10070

#10074

#20807

#20808

#10473
#20800

12" STM

12" CMP

18" STM

8" SAN

8" WTM

12" SLW

REMOVE EXISTING CURB AND GUTTER AND PLACE TEMP HMA UNDER FLAG CONTROL TO MAINTAIN ACCESS. WORK TO BE COMPLETED AT THE END OF STAGE 1.

ROAD CLOSED
R11-2

10' SPACING (TYP)

GRADING LIMIT LINE (TYP)

TAP PROPERTY

SYSTEX PROPERTY

ASPH

STONE WALL

B/BANK

HEAVY BRUSH

T/BANK

T/DITCH

GUARD RAIL

ERECT SIGNS ACCORDING TO "DETAIL B"

ERECT SIGNS ACCORDING TO "DETAIL A"

DRIVEWAY CLOSED
SG #1

N

CLOSEST TO WORK ZONE

WORK ZONE BEGINS
R5-18c

FURTHEST FROM WORK ZONE

ROAD WORK AHEAD
W20-1

PLACE THESE SIGNS AT 900' SPACING, OR AS DIRECTED BY ENGINEER

DETAIL A

CLOSEST TO WORK ZONE

SPEED LIMIT 30
R2-1 (30)

END ROAD WORK
G20-2

PLACE THESE SIGNS AT 300' SPACING, OR AS DIRECTED BY ENGINEER

DETAIL B

DRIVEWAY CLOSED

5.5 | 25 | 5.5
8.5 | 19 | 8.5
36

5 | 5 | 4 | 5 | 5
24

1.5" Radius, 1.0" Border, Black on Orange;
[DRIVEWAY] C 67% spacing;
[CLOSED] C 67% spacing;

SG #1

LEGEND

- TEMP TRAFFIC SIGNAL (PTS SYSTEM)
- TEMPORARY SIGN
- CHANNELIZING DEVICE, 42 INCH
- LIGHTED ARROW, TYPE C
- TYPE III BARRICADE, DOUBLE-SIDED, HIGH INTENSITY, LIGHTED
- WORK ZONE
- TEMP HMA PAVT PLACED THIS STAGE
- TEMP HMA PAVT PLACED PREVIOUS STAGES

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REVISIONS:

DATE	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
Value	Value	Value	Value	Value	1"=40'	Value	Value

PROJ NUMBER	ENG
1053-19-0010	Value

CITY OF BATTLE CREEK
BUCKNER DR
STAGE 1

SHEET R22

DRAWING PATH: P:\1000_1999\1053\180010_Buckner_Drive_Overpass\Drawings\Civil\Stage\180010STG1.dwg Jul 05, 2018 - 2:22pm

BUCKNER DRIVE

(R.O.W. VARIES)

JOB BENCHMARK #202
SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300
ELEV 919.06

JOB BENCHMARK #203
SET ARROW ON HYD S SIDE OF BUCKNER +/- 175' W OF TP #103
ELEV 920.43

TRAVERSE POINT #102
N 292708.63
E 12878253.15 ELEV 916.87

TRAVERSE POINT #103
N 292810.73
E 12878613.59 ELEV 918.31

N

USE A STEEL PLATE TO COVER TRENCHES ADJACENT TO ACTIVE TRAFFIC AT THE END OF EACH WORK DAY. STEEL PLATE INCLUDED IN MINOR TRAF DEVICES.

DRIVEWAY ASSISTANCE DEVICE

BUILD PROPOSED CURB SHOWN AND USE MAINTENANCE GRAVEL TO MAINTAIN DRIVEWAY (USED IN LATER STAGES)

STOP HERE ON RED
R10-6

25' TAPER 30'

10' SPACING (TYP)

ONE LANE ROAD AHEAD
W20-4

TAP PROPERTY

PAVT MRKG, WATERBORNE, 6 INCH, WHITE

CHANNELIZING DEVICE, 42 INCH (TYP) 10' SPACING (TYP)

PAVT MRKG, WET REFLECTIVE, TYPE R, TAPE, 4 INCH, YELLOW, TEMP (DOUBLE SOLID – 150 FT)

BUCKNER DR CONST ℄

ERECT SIGNS ACCORDING TO "DETAIL B"

300' 50' 50' TAPER

TURN LEFT ONLY
R3-31L

R3-1

TEMP TRAFFIC SIGNAL STA 18+00

TEMP TRAFFIC SIGNAL STA 23+90

PAVT MRKG, WET REFLECTIVE, TYPE R, TAPE, 24 INCH, STOP BAR

ROAD CLOSED
R11-2

TP# 20528

GUARD RAIL

300'

ERECT SIGNS ACCORDING TO "DETAIL A"

STOP HERE ON RED
R10-6

SYSTEX PROPERTY

ASPH

TP# 105

HEAVY BRUSH

T/BANK

T/BANK

CLOSEST TO WORK ZONE

FURTHEST FROM WORK ZONE

WORK ZONE BEGINS
R5-18c

W3-3

ONE LANE ROAD AHEAD
W20-4

ROAD WORK AHEAD
W20-1

PLACE THESE SIGNS AT 300' SPACING, OR AS DIRECTED BY ENGINEER

DETAIL A

CLOSEST TO WORK ZONE

SPEED LIMIT 30
R2-1 (30)

END ROAD WORK
G20-2

PLACE THESE SIGNS AT 300' SPACING, OR AS DIRECTED BY ENGINEER

DETAIL B

LEGEND

- DRIVEWAY ASSISTANCE DEVICE
- TEMP TRAFFIC SIGNAL (PTS SYSTEM)
- TEMPORARY SIGN
- CHANNELIZING DEVICE, 42 INCH
- LIGHTED ARROW, TYPE C
- TYPE III BARRICADE, DOUBLE-SIDED, HIGH INTENSITY, LIGHTED
- WORK ZONE
- TEMP HMA PAVT PLACED PREVIOUS STAGES

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DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP
Value	1055-15-0010	Value	Value	Value	Value	Value

HORIZ DATUM VERT DATUM
Value Value

SCALE
H: 1"=40'
V: 1"=4'

CITY OF BATTLE CREEK
BUCKNER DR
STAGE 2

SHEET R23

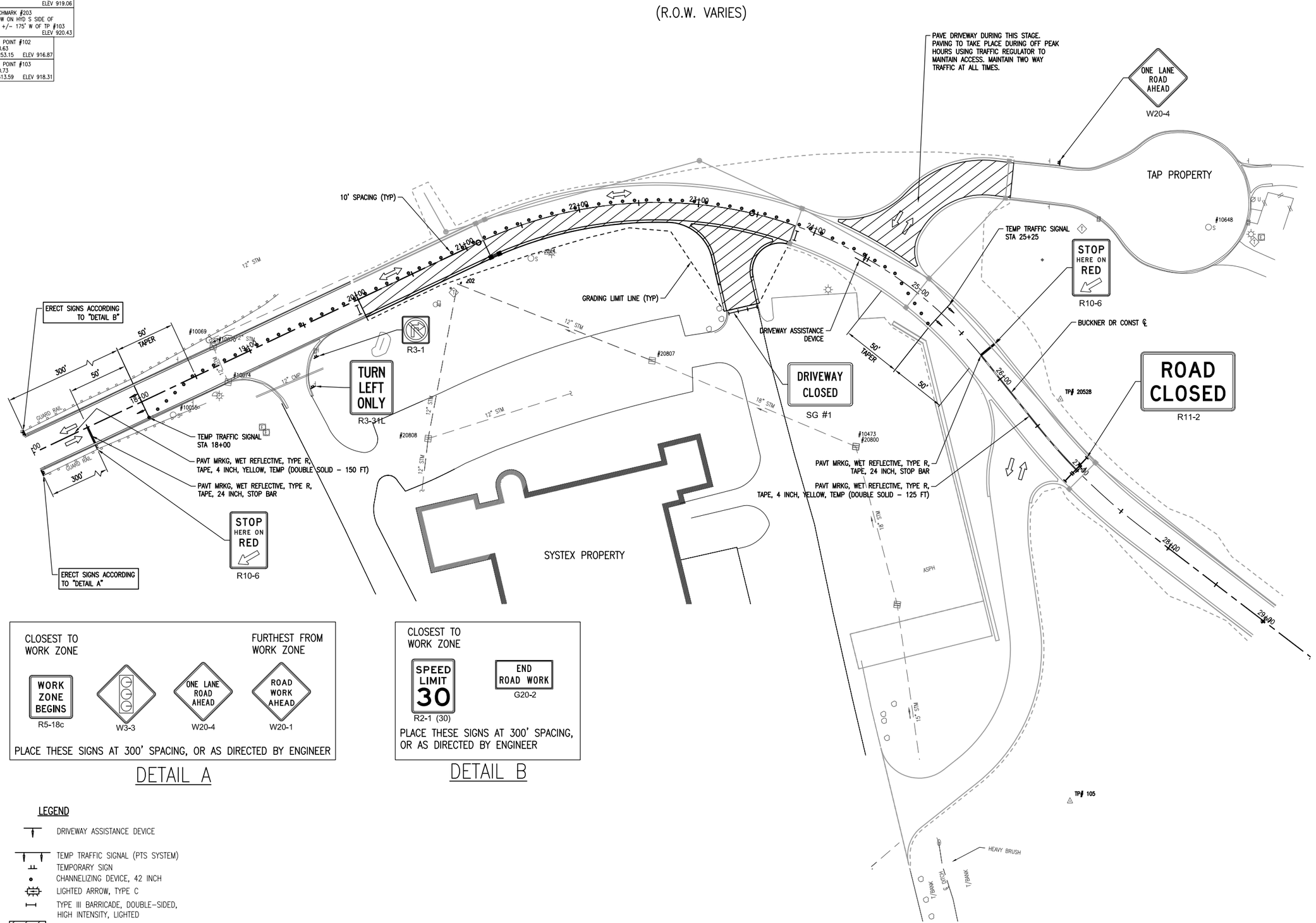
RE/SIGNS:

DRAWING PATH: P:\1000_1999\1055\180010_Buckner_Drive_Overpass\Drawings\Civil\Stage\180010STG2.dwg Jul 06, 2018 - 3:09pm

BUCKNER DRIVE

(R.O.W. VARIES)

JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300 ELEV 919.06
JOB BENCHMARK #203 SET ARROW ON HYD S SIDE OF BUCKNER +/- 175' W OF TP #103 ELEV 920.43
TRAVERSE POINT #102 N 292708.63 E 12878253.15 ELEV 916.87
TRAVERSE POINT #103 N 292810.73 E 12878613.59 ELEV 918.31



DETAIL A

CLOSEST TO WORK ZONE — FURTHEST FROM WORK ZONE

PLACE THESE SIGNS AT 300' SPACING, OR AS DIRECTED BY ENGINEER

DETAIL B

CLOSEST TO WORK ZONE

PLACE THESE SIGNS AT 300' SPACING, OR AS DIRECTED BY ENGINEER

LEGEND

- DRIVEWAY ASSISTANCE DEVICE
- TEMP TRAFFIC SIGNAL (PTS SYSTEM)
- TEMPORARY SIGN
- CHANNELIZING DEVICE, 42 INCH
- LIGHTED ARROW, TYPE C
- TYPE III BARRICADE, DOUBLE-SIDED, HIGH INTENSITY, LIGHTED
- WORK ZONE
- TEMP HMA PAVT PLACED PREVIOUS STAGES

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	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM
DATE	PROJ NUMBER						VERT DATUM
Value	1055-15-0010	Value	Value	Value	Value	H: 1"=40' V: 1"=4'	Value

CITY OF BATTLE CREEK
BUCKNER DR
STAGE 3

SHEET R24

Know what's **below.** **Call** before you dig. 811

DRAWING PATH: P:\1000_1999\1055\180010_Buckner_Drive_Overpass\Drawings\Civil\Stage\180010STG3.dwg Jul 06, 2018 - 3:09pm

WATER & SEWER UTILITY SYMBOLS

EXISTING

- ST — STORM MANHOLE
- SQUARE CATCH BASIN
- ROUND CATCH BASIN
- CULVERT
- CULVERT W/O END SECTION
- CULVERT W/END SECTION
- S — SANITARY MANHOLE
- CO — CLEAN OUT
- GW — GATE VALVE & WELL
- GATE VALVE & BOX
- W — WATER STOP BOX
- FIRE HYDRANT
- MP — METER PIT
- WATER METER
- SPRINKLER HEAD
- IRRIGATION VALVE

PROPOSED

- STORM MANHOLE
- SQUARE INLET/CATCH BASIN
- ROUND INLET/CATCH BASIN
- CULVERT END SECTION
- SANITARY MANHOLE
- GATE VALVE
- GV&W — GATE VALVE & WELL
- GV&B — GATE VALVE & BOX
- TSV&W — TAPPING SLEEVE VALVE & WELL
- TSV&B — TAPPING SLEEVE VALVE & BOX
- FIRE HYDRANT

REAL ESTATE SYMBOLS

- CONTIGUOUS PROPERTY SYMBOL
- XXXX — PARCEL NUMBER BOX
- NO ROW IMPACTS

MISCELLANEOUS UTILITY SYMBOLS

EXISTING

- GUY WIRE
- GP — GUY POLE
- U — UTILITY POLE
- U — UTILITY POLE W/LIGHT
- LIGHT/DECOR LAMP POLE
- GAS VALVE
- G — GAS METER
- G — GAS RISER
- E — TRANSFORMER PAD
- U — PRIVATE UTILITY MANHOLE
- E — ELECTRIC METER
- TS — TRAFFIC SIGNAL CONTROLLER
- HAND HOLE
- E — ELECTRIC RISER
- W — MONITORING WELL
- PEDESTRIAN SIGNAL

REMOVAL LEGEND

- SIDEWALK REMOVAL
- HMA SURFACE REMOVAL
- PAVEMENT REMOVAL
- CLEARING AND GRUBBING
- CURB AND GUTTER, REM
- TREE, REM
- SIGN, REM
- S — SALVAGE
- B — BULKHEAD
- A — ABANDON
- C — CLEARING
- R — REMOVE
- REL — RELOCATE
- REC — RECONSTRUCT
- REL B/O — RELOCATE BY OTHERS
- ADJ B/O — ADJUST BY OTHERS

MISCELLANEOUS SYMBOLS

EXISTING

- RIPRAP
- SIGN
- FLOW DIRECTION
- STUMP
- CONIFEROUS TREE — CL 1 1" TO 5", CL 2 6" TO 17", CL 3 18" TO 35", CL 4 36" AND UP
- DECIDUOUS TREE
- CONIFEROUS SHRUB
- DECIDUOUS SHRUB
- SB# — SOIL BORING
- SECTION CORNER
- IRON ROD/PIPE
- PK — PK NAIL
- BM #XXX — SURVEY BENCHMARK
- TP # — SURVEY TRAVERSE POINT
- CONCRETE
- GRAVEL

PROPOSED

- RIPRAP
- SIGN
- FLOW DIRECTION
- XX XX XXX — STRUCTURE NUMBER WM SAN STM
- CURB AND GUTTER, STD
- CURB AND GUTTER, SPILLOUT
- ASHPALT
- CONCRETE
- SF — SILT FENCE
- INLET FILTER
- CHECK DAM

GRADING

- FLOW DIRECTION
- 753.68 — EXISTING SPOT GRADE
- 749.25 FG — PROPOSED SPOT GRADE
- 665 / 664 — EXISTING CONTOUR
- 840 / 839 — PROPOSED CONTOUR

UTILITY PATTERN

EXISTING

- ELEC — ELECTRICAL *
- GAS — GAS\OIL
- CABLE/TEL — CABLE/TELEPHONE *
- 12" WM — WATER MAIN/SERVICE
- 12" SAN — SANITARY SEWER
- 12" STM — STORM SEWER

*OH = OVERHEAD , UG = UNDERGROUND

PROPOSED

- 12" WM — WATER MAIN/SERVICE
- 12" SAN — SANITARY SEWER
- 12" STM — STORM SEWER
- 4" UD — UNDERDRAIN
- SITE ELEC / LIGHTING

ROW PATTERN

EXISTING

- ROW — ROW
- SECTION
- PROPERTY/PARCEL

TOPO PATTERN

EXISTING

- HEDGE/TREE
- FENCE
- GUARDRAIL
- CENTERLINE OF DITCH
- WETLAND/EDGE OF WATER

PROPOSED

- CENTERLINE OF DITCH
- FENCE

SITE LAYOUT

- 10 / 12 — EX AND PROP PARKING SPACE COUNT
- EX AND PROP BARRIER FREE PARKING SPACE

ABBREVIATION KEY

AC	ACRE
ADJ	ADJUST
ASPH	ASPHALT
BC	BACK OF CURB
BF	BARRIER FREE
C+G	CURB AND GUTTER
CB	CATCH BASIN (STORM)
CF	CUBIC FEET
CL	CENTERLINE
COMM	COMMUNICATION UTILITY (PHONE, CABLE, DATA, ETC)
CONC	CONCRETE
CPE	CORRUGATED POLYETHYLENE (PIPE)
CY	CUBIC YARD
DI	DUCTILE IRON
DIA	DIAMETER
ELEC	ELECTRICAL
EX	EXISTING
FC	FACE OF CURB
FL	FLOWLINE
FG	FINISH GRADE / SURFACE (NON-PAVED AREA)
FM	FORCEMAIN
FT	FEET
GV	GATE VALVE
GV+B	GATE VALVE AND BOX
GV+W	GATE VALVE AND WELL
IN	INCHES
MH	MANHOLE STRUCTURE
OHM	OHM ADVISORS
PAVT	PAVEMENT
PROP	PROPOSED
RCP	REINFORCED CONCRETE PIPE
REM	REMOVE (AND DISPOSE)
RIM	TOP OF STRUCTURE CASTING
SAN	SANITARY SEWER / SERVICE
SF	SQUARE FEET
STM	STORM SEWER
SVC	SERVICE (WATER/SANITARY)
SY	SQUARE YARD
T/	TOP OF _____
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TW	TOP OF WALK
WM	WATER MAIN / SERVICE

LANDSCAPE HATCHES AND SYMBOLS

- LAWN
- SPECIALTY SEED
- SPECIALTY SEED
- SPECIALTY SEED

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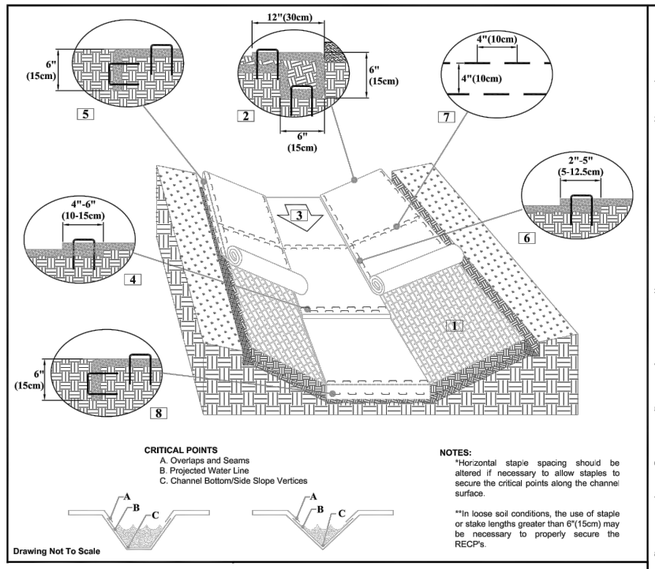
REVISIONS

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	MUNICIPALITY
	1053-19-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
GENERAL SITE LEGEND

SHEET GS-001

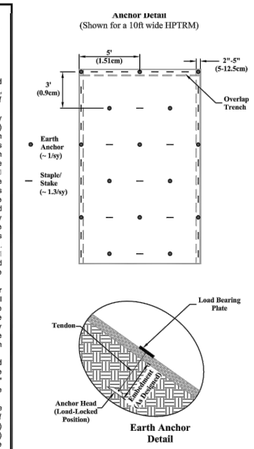
DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil Plans_Const\180010LEG_SITE_DESIGN.dwg Jul 09, 2018 - 4:55pm

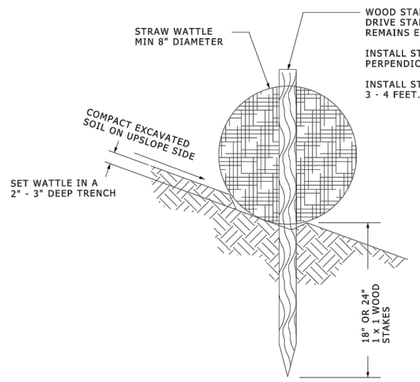


CHANNEL INSTALLATION DETAIL

1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the channel by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12"(30cm) of RECPs extended beyond the up-slope portion of the trench. Use ShoreMax mat at the channel/culvert outlet as supplemental scour protection as needed. Anchor the RECPs with a row of staples/stakes approximately 12"(30cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12"(30cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12" apart across the width of the RECPs.
3. Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. Place consecutive RECPs end-over-end (Shingle style) with a 4"-6" overlap. Use a double row of staples staggered 4" apart and 4" on center to secure RECPs.
5. Full length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes approximately 12"(30cm) apart in a 6"(15cm) deep X 6"(15cm) wide trench. Backfill and compact the trench after stapling.
6. Adjacent RECPs must be overlapped approximately 2"-5" (5-12.5cm) (Depending on RECPs type) and stapled.
7. In high flow channel applications a staple check slot is recommended at 30 to 40 foot (9 -12m) intervals. Use a double row of staples staggered 4"(10cm) apart and 4"(10cm) on center over entire width of the channel.
8. The terminal end of the RECPs must be anchored with a row of staples/stakes approximately 12" (30cm) apart in a 6"(15cm) deep X 6"(15cm) wide trench. Backfill and compact the trench after stapling.

EROSION CONTROL BLANKET
CHANNEL INSTALLATION DETAIL
NOT TO SCALE

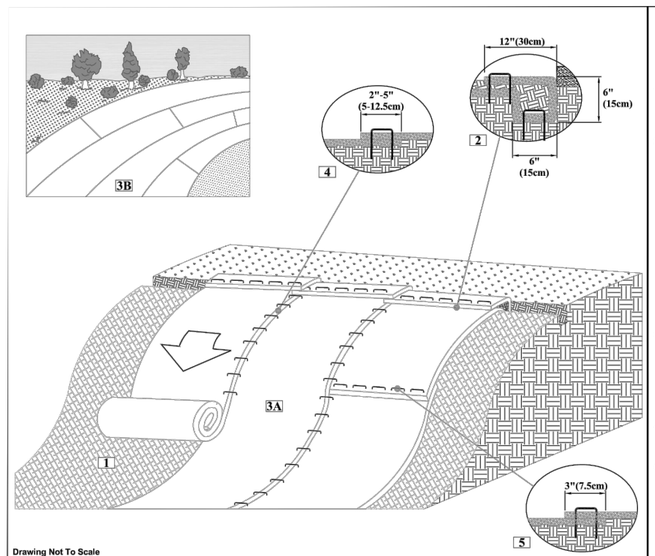




1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2-3" DEEP X 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UP-SLOPE FROM THE ANCHOR TRENCH AND COMPACTED.
2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.
3. SECURE THE WATTLE WITH 18-24" STAKES EVERY 3-4' AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE LEAVING AT LEAST 2-3" OF STAKE EXTENDING ABOVE THE WATTLE. STAKES SHOULD BE DRIVEN PERPENDICULAR TO SLOPE FACE.
4. UNLESS SPECIFIED, CONTRACTOR CAN ELECT TO USE ANY STANDARD STRAW WATTLE SIZING 8" IN DIAMETER OR LARGER.
5. GUIDELINES FOR WATTLE SPACING BASED ON SLOPE GRADIENT:

SLOPE	SPACING
<6:1	50 FEET
5:1 - 4:1	25 FEET
4:1 - 2:1	20 FEET
2:1 - 1:1	10 FEET
> 1:1	5 FEET

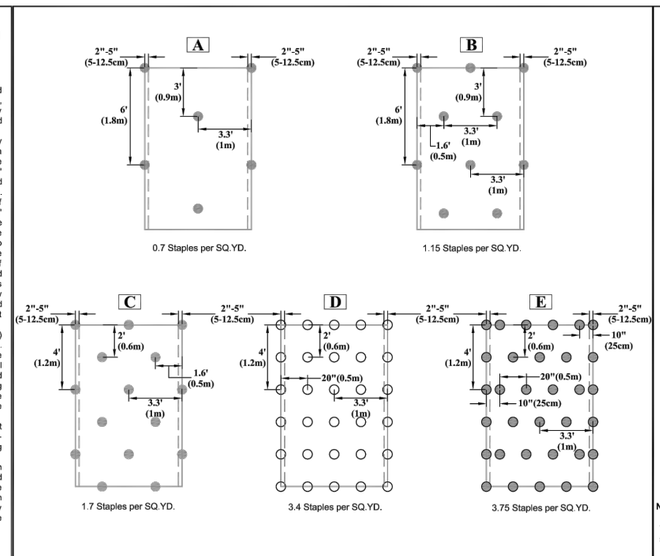
STRAW WATTLE INSTALLATION DETAIL
NOT TO SCALE



SLOPE INSTALLATION DETAIL

1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the slope by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12" (30cm) of RECPs extended beyond the up-slope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12" (30cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12"(30cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12"(30cm) apart across the width of the RECPs.
3. Roll the RECPs (A) down or (B) horizontally across the slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. The edges of parallel RECPs must be stapled with approximately 2" - 5" (5-12.5cm) overlap depending on the RECPs type.
5. Consecutive RECPs spliced down the slope must be end over end (Shingle style) with an approximate 3"(7.5cm) overlap. Staple through overlapped area, approximately 12"(30cm) apart across entire RECPs width.

*NOTE:
In loose soil conditions, the use of staple or stake lengths greater than 6"(15cm) may be necessary to properly secure the RECP's.



STAPLE PATTERN GUIDE

- 4:1 Slopes (A)
- 3:1 Slopes (B)
- 2:1 Slopes (C)
- 1:1 & Steeper Slopes (D)
- Medium/High Flow Channel (D)
- High Flow Channel And Shoreline (E)

NOTES:

* Use ECMDS© for more accurate staple pattern selection.

Drawing Not To Scale

EROSION CONTROL BLANKET
SLOPE INSTALLATION DETAIL
NOT TO SCALE

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REVISIONS:

DATE | PROJ NUMBER | ENG | PROJ MGR | CADD | COUNTY | MUNICIPALITY
103-18-0010 | Value | Value | Value | Value | Value

CITY OF BATTLE CREEK
BUCKNER DR
GENERAL SITE DETAILS

SHEET GS-110

JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300 ELEV 919.06
JOB BENCHMARK #203 SET ARROW ON HYD S SIDE OF BUCKNER +/– 175' W OF TP #103 ELEV 920.43
JOB BENCHMARK #204 SET PAINTED "X" ON SE CORNER OF GEN PAD ON E GACE OF BLD #300 ELEV 917.30
JOB BENCHMARK #210 SET CHISELED "X" ON NORTH RIM OF STORM MH IN SOUTHERN SIDE OF TRUCK BAY PARKING ELEV 914.34
TRAVERSE POINT #15 N 291550.31 E 12878433.60 ELEV 927.59
TRAVERSE POINT #102 N 292708.63 E 12878253.15 ELEV 916.87
TRAVERSE POINT #103 N 292810.73 E 12878613.59 ELEV 918.31
TRAVERSE POINT #104 N 292404.08 E 12878707.53 ELEV 921.15
TRAVERSE POINT #105 N 292286.85 E 12878796.57 ELEV 936.64
TRAVERSE POINT #109 N 292327.84 E 12879106.26 ELEV 940.74
TRAVERSE POINT #110 N 291904.40 E 12878736.72 ELEV 931.28
TRAVERSE POINT #111 N 291621.85 E 12878423.63 ELEV 927.59
TRAVERSE POINT #20528 N 292618.61 E 12878745.20 ELEV 931.16

N

GRAPHIC SCALE: 1 inch = 80 feet

0 40 80 160 240

SOIL BORING INVENTORIES

SOIL BORING B-1 W85° 16' 21.55" N42° 17' 58.22" ELEV 916.34
SOIL BORING B-2 W85° 16' 17.40" N42° 17' 58.55" ELEV 922.16
SOIL BORING B-3 W85° 16' 15.24" N42° 17' 57.21" ELEV 933.56
SOIL BORING B-4 W85° 16' 11.79" N42° 17' 55.74" ELEV 944.66
SOIL BORING B-5 W85° 16' 15.28" N42° 17' 54.95" ELEV 921.34

SOIL BORING B-101 W85° 16' 13.89" N42° 17' 55.02" ELEV 938.15
SOIL BORING B-102 W85° 16' 12.91" N42° 17' 53.07" ELEV 939.88
SOIL BORING B-103 W85° 16' 14.03" N42° 17' 51.15" ELEV 933.84
SOIL BORING B-104 W85° 16' 16.20" N42° 17' 49.93" ELEV 929.90
SOIL BORING B-105 W85° 16' 18.78" N42° 17' 49.21" ELEV 926.88
SOIL BORING B-106 W85° 16' 15.74" N42° 17' 48.43" ELEV 928.95
SOIL BORING B-107 W85° 16' 18.39" N42° 17' 48.43" ELEV 927.92

Know what's **below.**
Call before you dig.

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	MUNICIPALITY
	1053-18-0010	Valko	Valko	Valko	Valko	Valko

CITY OF BATTLE CREEK
BUCKNER DR

SYSTEX - SOIL BORING PLAN

SHEET SS-104

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010SUR_SITE_DESIGN.dwg Jul 09, 2018 - 4:56pm

DRAFT

BORING B 1

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 5/23/18 **COMPLETED:** 5/23/18 **BORING METHOD:** Solid-stem Augers
DRILLER: JB **RIG NO.:** CME 45B **LOGGED BY:** EFG **CHECKED BY:** KJG

SURFACE ELEVATION: 916.3 FT

DEPTH (FEET)	PROFILE DESCRIPTION	ELEVATION (FEET)	SAMPLE TYPE/NO.	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE
0.7	8 inches of ASPHALT PAVEMENT	915.6				
	Fine to Medium SAND with Silt- Occassional Clayey Sand Seams- Brown- Moist- Medium Dense (SP-SM)		SB1	18	7 8 15	23
			SB2	18	9 11 11	22
6.0		910.3	SB3	18	3 4 5	9
	Fine to Medium SAND- Brown- Wet- Loose (SP)		SB4	18	1 2 2	4
10.0	END OF BORING AT 10.0 FEET.	906.3				

REMARKS: Cobbles encountered from 2.5 feet to 5.0 feet below the ground surface.

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (FT)	ELEV (FT)
▽ DURING BORING:	6.0	910.3
▼ AT END OF BORING:	6.0	910.3

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.
2. Surface capped with asphalt cold patch after backfilling the borehole.

BORING B 2

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 5/23/18 **COMPLETED:** 5/23/18 **BORING METHOD:** Solid-stem Augers
DRILLER: JB **RIG NO.:** CME 45B **LOGGED BY:** EFG **CHECKED BY:** KJG

SURFACE ELEVATION: 922.2 FT

DEPTH (FEET)	PROFILE DESCRIPTION	ELEVATION (FEET)	SAMPLE TYPE/NO.	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE
0.4	5 inches of TOPSOIL- Dark Brown	921.8				
	FILL- Fine SILTY SAND- Occasional Root Fibers- Buried Topsoil Layer at about 7 feet- Dark Brown- Moist to Wet- Medium Dense (SM)		SB1	18	4 5 5	10
			SB2	18	4 5 5	10
8.5		913.7	SB3	18	9 7 7	14
	Fine to Medium CLAYEY SAND- Occasional Sandy Clay Seams- Brown- Wet- Medium Dense (SC)		SB4	18	6 7 11	18
10.0	END OF BORING AT 10.0 FEET.	912.2				

REMARKS: A loss-on-ignition (LOI) test performed on Sample SB3 indicates an organic content of about 3.7 percent.

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (FT)	ELEV (FT)
▽ DURING BORING:	1.0	921.2
▼ AT END OF BORING:	7.0	915.2

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

BORING B 3

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 5/23/18 **COMPLETED:** 5/23/18 **BORING METHOD:** Hand Auger
FIELD REPRESENTATIVE: AH **EQUIPMENT:** Hand Auger **LOGGED BY:** JEL **CHECKED BY:** KJG

SURFACE ELEVATION: 933.6 FT

DEPTH (FEET)	PROFILE DESCRIPTION	ELEVATION (FEET)	SAMPLE TYPE/NO.	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES
	Fine SILTY to CLAYEY SAND- Occasional Roots- Brown- Moist (SM/SC)		AS1		
2.5		931.1			
	LEAN CLAY with Sand- Brown- Stiff (CL)		AS2		
5.0	END OF BORING AT 5.0 FEET.	928.6			

REMARKS: Cobbles encountered from 2.5 feet to 5.0 feet below the ground surface.

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

BORING B 4

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 5/23/18 **COMPLETED:** 5/23/18 **BORING METHOD:** Hand Auger
FIELD REPRESENTATIVE: AH **EQUIPMENT:** Hand Auger **LOGGED BY:** JEL **CHECKED BY:** KJG

SURFACE ELEVATION: 944.7 FT

DEPTH (FEET)	PROFILE DESCRIPTION	ELEVATION (FEET)	SAMPLE TYPE/NO.	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES
1.0	Fine SILTY to CLAYEY SAND- Frequent Root Fibers- Brown- Moist (SM/SC)	943.7	AS1		
	Fine CLAYEY SAND- Brown- Moist (SC)		AS2		
3.5		941.2			
	Fine SAND with Silt- Brown- Moist (SP-SM)		AS3		
5.5		939.2			
	Fine SILTY to CLAYEY SAND- Brown- Moist (SM/SC)		AS4		
7.5		937.2			
8.5	Fine to Medium SAND with Silt- Brown- Moist (SP-SM)	936.2	AS5		
	END OF BORING AT 8.5 FEET.				

REMARKS: Cobbles encountered from 1.0 feet to 3.5 feet below the ground surface.

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

BORING B 5

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 5/23/18 **COMPLETED:** 5/23/18 **BORING METHOD:** Solid-stem Augers
DRILLER: JB **RIG NO.:** CME 45B **LOGGED BY:** EFG **CHECKED BY:** KJG

SURFACE ELEVATION: 921.3 FT

DEPTH (FEET)	PROFILE DESCRIPTION	ELEVATION (FEET)	SAMPLE TYPE/NO.	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE
0.2	3 inches of TOPSOIL- Dark Brown	921.1				
	Fine to Medium SILTY SAND- Occassional Sandy Clay Seams- Brown- Wet- Extremely Dense (SM)		SB1	14	10 11 50/3"	61*
3.5		917.8				
	Fine SAND with Silt- Brown- Wet- Dense (SP-SM)		SB2	16	18 16 23	41
6.0		915.3	SB3	18	18 26 32	58
	SANDY SILT- Brown- Wet- Very Dense to Extremely Dense (ML)		SB4	18	21 38 45	83
10.0	END OF BORING AT 10.0 FEET.	911.3				

REMARKS: Driller reported driving a rock for Sample SB2.

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (FT)	ELEV (FT)
▽ DURING BORING:	0.0	921.3
▼ AT END OF BORING:	6.0	915.3

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

BORING B 6

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 5/23/18 **COMPLETED:** 5/23/18 **BORING METHOD:** Hand Auger
FIELD REPRESENTATIVE: AH **EQUIPMENT:** Hand Auger **LOGGED BY:** JEL **CHECKED BY:** KJG

SURFACE ELEVATION: 930 FT

DEPTH (FEET)	PROFILE DESCRIPTION	ELEVATION (FEET)	SAMPLE TYPE/NO.	BLOWS PER SIX INCHES
0.5	Fine SILTY to CLAYEY SAND- Frequent Root Fibers- Brown- Moist (SM/SC)	929.5	AS1	
	Fine SILTY SAND- Occasional Root Fibers- Brown- Moist (SM)		AS2	
3.5		926.5		
	Fine to Medium SILTY SAND with Gravel- Brown- Moist (SM)		AS3	
7.5	END OF BORING AT 7.5 FEET.	922.5		

REMARKS: Cobbles encountered from 0.5 feet to 7.5 feet below the existing ground surface.

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

BORING B101

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 6/25/18 **COMPLETED:** 6/25/18 **BORING METHOD:** Hollow-stem Augers
DRILLER: DC (D&T) **RIG NO.:** IR A300 **LOGGED BY:** EFG **CHECKED BY:** AJR

LATITUDE: 42.298618 N
LONGITUDE: -85.270525 W

DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NO.	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE
1.0	12 Inches of TOPSOIL				
	Fine SILTY SAND- Brown- Moist- Loose to Very Loose (SM)	SB1	8	3 3 2	5
		SB2	12	1 1 2	3
7.0		SB3	16	4 5 8	13
	Fine SAND- Brown- Moist- Medium Dense (SP)	SB4	6	11 14 18	32
9.8		SB5	8	11 14 18	32
	Fine to Coarse SAND with Gravel- Brown- Moist- Dense (SP)	SB6	16	18 11 14	25
13.0		SB7	18	6 5 5	10
	Fine SILTY SAND- Brown- Moist- Medium Dense to Loose (SM)	SB8	18	6 4 5	9
20.0	END OF BORING AT 20.0 FEET.				

REMARKS: Cobbles encountered from 9.8 feet to 13.0 feet below the ground surface.

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

BORING B102

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 6/25/18 **COMPLETED:** 6/25/18 **BORING METHOD:** Hollow-stem Augers
DRILLER: DC (D&T) **RIG NO.:** IR A300 **LOGGED BY:** EFG **CHECKED BY:** AJR

LATITUDE: 42.298075 N
LONGITUDE: -85.270253 W

DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NO.	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE
1.1	13 Inches of TOPSOIL- Brown				
	Fine CLAYEY SAND- Brown- Moist- Very Loose (SC)	SB1	16	3 2 2	4
3.0		SB2	16	2 1 2	3
	Fine SILTY SAND- Brown- Moist- Very Loose to Medium Dense (SM)	SB3	14	6 6 7	13
		SB4	16	7 8 7	15
		SB5	18	8 8 8	16
		SB6	16	5 5 6	11
		SB7	18	6 10 12	22
20.0	END OF BORING AT 20.0 FEET.	SB8	18	6 10 12	22

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

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DATE: PROJ. NUMBER: 1053-16-0010 | DSN: Value | PROJ MGR: Value | CADD: Value | COUNTY: Value | MUNICIPALITY: Value

CITY OF BATTLE CREEK
BUCKNER DR
SYSTEX - SOIL BORING LOGS

SHEET: SS-105

DRAWING PATH: P:\1000_1999\1053180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010SOIL_SITE.dwg Jul 09, 2018 - 4:56pm

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BORING B103

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 6/25/18 **COMPLETED:** 6/25/18 **BORING METHOD:** Hollow-stem Augers
DRILLER: DC (D&T) **RIG NO.:** IR A300 **LOGGED BY:** EFG **CHECKED BY:** AJR

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE ○	DRY DENSITY (pcf) ■ / MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. / TORVANE SHEAR / UNC.COMP. / VANE SHEAR (PK) / VANE SHEAR (REM) / TRIAXIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
0		LATITUDE: 42.297543 N LONGITUDE: -85.270565 W							
1.0		12 Inches of TOPSOIL							
3.0		Fine SILTY SAND- Brown- Moist- Loose (SM)	SB1	18	5 5 4	9			
5.5		Fine SAND with Silt- Brown- Moist- Very Loose (SP-SM)	SB2	18	3 2 2	4			
			SB3	14	1 2 2	4			
11.0		Fine SAND- Brown- Moist- Very Loose (SP)	SB4	12	2 1 1	2			
13.0		Fine to Medium SAND- Brown- Moist- Medium Dense (SP)	SB5	12	4 6 9	15			
15.0		Fine to Coarse SAND with Gravel- Brown- Moist- Dense (SP)	SB6	14	8 13 20	33			
		END OF BORING AT 15.0 FEET.							

GROUNDWATER & BACKFILL INFORMATION
GROUNDWATER WAS NOT ENCOUNTERED
BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

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BORING B104

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 6/25/18 **COMPLETED:** 6/25/18 **BORING METHOD:** Hollow-stem Augers
DRILLER: DC (D&T) **RIG NO.:** IR A300 **LOGGED BY:** EFG **CHECKED BY:** AJR

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE ○	DRY DENSITY (pcf) ■ / MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. / TORVANE SHEAR / UNC.COMP. / VANE SHEAR (PK) / VANE SHEAR (REM) / TRIAXIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
0		LATITUDE: 42.297203 N LONGITUDE: -85.271166 W							
1.0		12 Inches of TOPSOIL							
3.0		Fine SILTY SAND- Brown- Moist- Loose (SM)	SB1	16	4 4 5	9			
6.0		Fine to Medium SAND with Silt- Frequent Silty Sand Seams- Brown- Moist- Loose (SP-SM)	SB2	16	4 5 5	10			
9.0		Fine to Coarse SAND with Silt and Gravel- Brown- Moist- Very Loose (SP-SM)	SB3	3	2 1 2	3			
10.0		Fine SAND- Brown- Moist- Loose (SP)	SB4	12	2 2 4	6			
		END OF BORING AT 10.0 FEET.							

GROUNDWATER & BACKFILL INFORMATION
GROUNDWATER WAS NOT ENCOUNTERED
BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

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BORING B105

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 6/25/18 **COMPLETED:** 6/25/18 **BORING METHOD:** Hollow-stem Augers
DRILLER: DC (D&T) **RIG NO.:** IR A300 **LOGGED BY:** EFG **CHECKED BY:** AJR

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE ○	DRY DENSITY (pcf) ■ / MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. / TORVANE SHEAR / UNC.COMP. / VANE SHEAR (PK) / VANE SHEAR (REM) / TRIAXIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
0		LATITUDE: 42.297004 N LONGITUDE: -85.271984 W							
1.0		12 Inches of TOPSOIL							
		Fine SAND with Silt- Brown- Moist- Loose (SM)	SB1	12	3 3 4	7			
6.0			SB2	14	3 3 7	10			
		Fine to Coarse SAND with Silt and Gravel- Brown- Medium Dense to Dense (SP-SM)	SB3	10	8 8 9	17			
10.0			SB4	10	8 11 22	33			
		END OF BORING AT 10.0 FEET.							

GROUNDWATER & BACKFILL INFORMATION
GROUNDWATER WAS NOT ENCOUNTERED
BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

SME

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BORING B106

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 6/25/18 **COMPLETED:** 6/25/18 **BORING METHOD:** Hollow-stem Augers
DRILLER: DC (D&T) **RIG NO.:** IR A300 **LOGGED BY:** EFG **CHECKED BY:** AJR

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE ○	DRY DENSITY (pcf) ■ / MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. / TORVANE SHEAR / UNC.COMP. / VANE SHEAR (PK) / VANE SHEAR (REM) / TRIAXIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
0		LATITUDE: 42.296786 N LONGITUDE: -85.271030 W							
1.0		13 Inches of TOPSOIL							
		Fine CLAYEY SAND- Brown- Moist- Loose (SC)	SB1	16	2 5 5	10			
4.0			SB2	14	4 6 6	12			
6.0		Fine to Medium SAND with Silt- Brown- Moist- Medium Dense (SP-SM)	SB3	14	4 3 3	6			
10.0		Fine to Medium SAND- Brown- Moist to Wet- Loose (SP)	SB4	16	2 3 3	6			
		END OF BORING AT 10.0 FEET.							

GROUNDWATER & BACKFILL INFORMATION
DEPTH (FT)
▽ **DURING BORING:** 9.0
▼ **AT END OF BORING:** Note 2
BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.
2. Groundwater was not encountered upon completion of drilling.

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BORING B107

PAGE 1 OF 1

PROJECT NAME: Buckner Road Extension
PROJECT NUMBER: 079043.00
CLIENT: OHM Advisors
PROJECT LOCATION: Battle Creek, Michigan
DATE STARTED: 6/25/18 **COMPLETED:** 6/25/18 **BORING METHOD:** Hollow-stem Augers
DRILLER: DC (D&T) **RIG NO.:** IR A300 **LOGGED BY:** EFG **CHECKED BY:** AJR

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	RECOVERY LENGTH (INCHES)	BLOWS PER SIX INCHES	N-VALUE ○	DRY DENSITY (pcf) ■ / MOISTURE & ATTERBERG LIMITS (%) PL MC LL	HAND PENE. / TORVANE SHEAR / UNC.COMP / VANE SHEAR (PK) / VANE SHEAR (REM) / TRIAXIAL (UU) SHEAR STRENGTH (KSF)	REMARKS
0		LATITUDE: 42.296452 N LONGITUDE: -85.271774 W							
1.0		12 Inches of TOPSOIL							
		Fine SAND- Brown- Moist- Loose (SP)	SB1	14	4 5 5	9			
3.0			SB2	16	4 4 3	7			
		Fine to Medium SAND with Silt- Brown- Moist- Loose to Medium Dense (SP-SM)	SB3	8	6 7 4	11			Cobbles encountered from 6.0 feet to 7.5 feet below the ground surface.
▽ 9.0			SB4	10	3 3 2	5			
▼ 10.0		Fine to Medium SAND- Brown- Wet- Loose (SP)							
		END OF BORING AT 10.0 FEET.							

GROUNDWATER & BACKFILL INFORMATION
DEPTH (FT)
▽ **DURING BORING:** 9.0
▼ **AT END OF BORING:** 9.5
BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

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REVISIONS:

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CITY OF BATTLE CREEK
BUCKNER DR
SYSTEX - SOIL BORING LOGS

SHEET
SS-106

DRAWING PATH: P:\1000_1999\1053180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010SOIL_SITE.dwg Jul 09, 2018 - 4:56pm

JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300 ELEV 919.06
JOB BENCHMARK #203 SET ARROW ON HYD S SIDE OF BUCKNER +/– 175' W OF TP #103 ELEV 920.43
JOB BENCHMARK #204 SET PAINTED "X" ON SE CORNER OF GEN PAD ON E GACE OF BLD #300 ELEV 917.30
JOB BENCHMARK #210 SET CHISELED "X" ON NORTH RIM OF STORM MH IN SOUTHERN SIDE OF TRUCK BAY PARKING ELEV 914.34
TRAVERSE POINT #15 N 291550.31 E 12878433.60 ELEV 927.59
TRAVERSE POINT #102 N 292708.63 E 12878253.15 ELEV 916.87
TRAVERSE POINT #103 N 292810.73 E 12878613.59 ELEV 918.31
TRAVERSE POINT #104 N 292404.08 E 12878707.53 ELEV 921.15
TRAVERSE POINT #105 N 292286.85 E 12878796.57 ELEV 936.64
TRAVERSE POINT #109 N 292327.84 E 12879106.26 ELEV 940.74
TRAVERSE POINT #110 N 291904.40 E 12878736.72 ELEV 931.28
TRAVERSE POINT #111 N 291621.85 E 12878423.63 ELEV 927.59
TRAVERSE POINT #20528 N 292618.61 E 12878745.20 ELEV 931.16

N

GRAPHIC SCALE: 1 inch = 80 feet

0 40 80 160 240

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REVISIONS
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DATE	PROJ NUMBER	DNG	PROJ MGR	CMD	COUNTY	MUNICIPALITY
	1053-19-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
SYSTEX - EXISTING CONDITIONS PLAN, OVERALL VIEW

SHEET SS-110

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010SUR_SITE_DESIGN.dwg Jul 09, 2018 - 4:57pm

JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300 ELEV 919.06
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TRAVERSE POINT #111 N 291621.85 E 12878423.63 ELEV 927.59
TRAVERSE POINT #20528 N 292618.61 E 12878745.20 ELEV 931.16

EXISTING STRUCTURE INVENTORIES

STORM

#10074 SQ CATCH BASIN T/CAST 917.86
12" RCP INV W 913.46

#10070 SQ CATCH BASIN T/CAST 917.72
12" RCP INV E 913.17
12" RCP INV W 913.22

#10069 STORM MANHOLE T/CAST 918.65
12" RCP INV N 913.13
12" RCP INV E 913.17

#10322 SQ CATCH BASIN T/CAST 917.22
12" RCP INV W 913.90

#10327 SQ CATCH BASIN T/CAST 917.16
12" RCP INV S 913.41
12" RCP INV E 913.51

#10208 STORM MANHOLE T/CAST 916.64
12" RCP INV N 910.49
12" RCP INV S 910.49
12" RCP INV E 910.39
12" RCP INV W 910.39

#10206 SQ CATCH BASIN T/CAST 915.84
12" RCP INV N 911.04

#10207 SQ CATCH BASIN T/CAST 915.81
12" RCP INV S 910.81
12" RCP INV E 910.91

#20019 SQ CATCH BASIN T/CAST 918.79

#10216 SQ CATCH BASIN T/CAST 915.91
12" RCP INV N 911.61

#10217 SQ CATCH BASIN T/CAST 915.88
12" RCP INV S 911.48
12" RCP INV W 911.38

#10473 SQ CATCH BASIN T/CAST 918.05

#20807 SQUARE CATCH BASIN T/CAST 916.95
12" RCP INV SE 911.95
12" RCP INV NW 911.50

#20808 SQUARE CATCH BASIN T/CAST 916.95
12" RCP INV N 911.65
12" RCP INV NE 911.65
12" RCP INV S 911.65

SANITARY

#10648 SANITARY MANHOLE T/CAST 919.77
10" CLAY INV N 908.47
10" CLAY INV S 908.47

#10342 SANITARY MANHOLE T/CAST 918.41
10" CLAY INV N 909.41
10" CLAY INV S 909.41

#10224 SANITARY MANHOLE T/CAST 917.03
10" CLAY INV N 910.63
10" CLAY INV S 910.63

#10055 SANITARY MANHOLE T/CAST 919.42

DEMOLITION NOTES

THIS SHEET SHOWS THE SITE DEMOLITION ONLY. SEE ROAD IMPROVEMENTS DEMOLITION ON SHEET R9

DEMOLITION LEGEND

Ⓡ REMOVE

GRAPHIC SCALE: 1 inch = 80 feet
0 40 80 160 240

LEGAL DESCRIPTION

1. DESCRIPTION OF PARCEL #0067-00-120-0 (SYSTEX):

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 17, TOWN 2 SOUTH, RANGE 8 WEST, CALHOUN COUNTY, MICHIGAN; THENCE N. 89°57'32" E. ALONG THE SOUTH LINE OF SAID SECTION, 433.03 FEET; THENCE N. 00°54'42" W. ALONG THE EASTERLY LINE OF MARTIN LUTHER KING, Jr. HIGHWAY, 928.00 FEET; THENCE N. 89°05'18" E. 100.00 FEET; THENCE N. 00°54'42" W. ALONG THE EASTERLY LINE OF BUCKNER DRIVE, 1448.35 FEET; THENCE CONTINUING NORTHEASTERLY 1025.28 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE, AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 1011.74 FEET, AND WHOSE CHORD BEARS N. 28°07'11" E. 981.97 FEET TO THE POINT OF BEGINNING; THENCE N. 57°09'04" E. ALONG THE EASTERLY LINE OF BUCKNER DRIVE, 343.40 FEET; THENCE CONTINUING NORTHEASTERLY 552.30 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 991.74 FEET AND WHOSE CHORD BEARS N. 73°06'19" E. 545.19 FEET; THENCE S. 21°17'17" E. 143.58 FEET; THENCE S. 60°09'15" E. 495.37 FEET TO THE NORTHWESTERLY LINE OF GRAND TRUNK WESTERN RAILROAD; THENCE S. 29°50'45" W. ALONG SAID NORTHWESTERLY LINE 452.63 FEET; THENCE CONTINUING SOUTHWESTERLY 744.42 FEET ALONG SAID NORTHWESTERLY LINE, AND THE ARC OF A CURVE TO THE LEFT WHOSE RADIUS IS 5951.18 FEET AND WHOSE CHORD BEARS S. 26°15'45" W. 743.93 FEET; THENCE S. 89°05'18" W. 420.00 FEET; THENCE N. 10°06'27" W. 537.39 FEET; THENCE N. 21°17'17" W. 614.94 FEET TO THE POINT OF BEGINNING.

2. DESCRIPTION OF PORTION OF PARCEL #0067-00-120-0 TO BE USED FOR RIGHT-OF-WAY (SYSTEX):

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 17, TOWN 2 SOUTH, RANGE 8 WEST, CALHOUN COUNTY, MICHIGAN; THENCE N. 89°57'32" E. ALONG THE SOUTH LINE OF SAID SECTION, 433.03 FEET; THENCE N. 00°54'42" W. ALONG THE EASTERLY LINE OF MARTIN LUTHER KING, Jr. HIGHWAY, 928.00 FEET; THENCE N. 89°05'18" E. 100.00 FEET; THENCE N. 00°54'42" W. ALONG THE EASTERLY LINE OF BUCKNER DRIVE, 1448.35 FEET; THENCE CONTINUING NORTHEASTERLY 1025.28 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE, AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 1011.74 FEET, AND WHOSE CHORD BEARS N. 28°07'11" E. 981.97 FEET; THENCE N. 57°09'04" E. ALONG THE EASTERLY LINE OF BUCKNER DRIVE, 343.40 FEET; THENCE CONTINUING NORTHEASTERLY 238.76 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 991.74 FEET AND WHOSE CHORD BEARS N. 64°02'54" E. 238.19 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING NORTHEASTERLY 313.54 FEET ALONG BUCKNER DRIVE AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 991.74 AND WHOSE CHORD BEARS N. 80°00'08" E. 312.23 FEET; THENCE S. 21°17'17" E. 143.58 FEET; THENCE S. 60°09'15" E. 495.37 FEET TO THE NORTHWESTERLY LINE OF GRAND TRUNK WESTERN RAILROAD; THENCE S. 29°50'45" W ALONG SAID NORTHWESTERLY LINE 80.00 FEET; THENCE N. 60°09'15" W. 148.05 FEET; THENCE NORTHWESTERLY 91.14 FEET ALONG THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 540.00 FEET AND WHOSE CHORD BEARS N. 55°19'09" W. 91.03 FEET; THENCE N. 50°29'03" W. 263.47 FEET; THENCE NORTHWESTERLY 367.62 FEET ALONG THE ARC OF A CURVE TO THE LEFT WHOSE RADIUS IS 460.00 FEET AND WHOSE CHORD BEARS N. 73°22'42" W. 357.91 FEET TO THE EASTERLY LINE OF BUCKNER DRIVE AND THE POINT OF BEGINNING. CONTAINING 1.20 ACRES OF LAND, MORE OR LESS.

3. DESCRIPTION OF PARCEL #0067-00-130-0 (TAP):

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 17, TOWN 2 SOUTH, RANGE 8 WEST, CALHOUN COUNTY, MICHIGAN; THENCE N. 89°57'32" E. ALONG THE SOUTH LINE OF SAID SECTION, 433.03 FEET; THENCE N. 00°54'42" W. ALONG THE EASTERLY LINE OF MARTIN LUTHER KING, Jr. HIGHWAY, 928.00 FEET; THENCE N. 89°05'18" E. 100.00 FEET; THENCE N. 00°54'42" W. ALONG THE EASTERLY LINE OF BUCKNER DRIVE, 1448.35 FEET; THENCE CONTINUING NORTHEASTERLY 1025.28 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE, AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 1011.74 FEET, AND WHOSE CHORD BEARS N. 28°07'11" E. 981.97 FEET; THENCE N. 57°09'04" E. ALONG THE EASTERLY LINE OF BUCKNER DRIVE, 343.40 FEET; THENCE CONTINUING NORTHEASTERLY 552.30 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 991.74 FEET AND WHOSE CHORD BEARS N. 73°06'19" E. 545.19 FEET TO THE POINT OF BEGINNING; THENCE EASTERLY 20.00 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 991.74 FEET AND WHOSE CHORD BEARS N. 89°38'14" E. 20.00 FEET; THENCE S. 89°47'06" E. ALONG SAID BUCKNER DRIVE 40.00 FEET; THENCE S. 00°12'54" W. ALONG SAID BUCKNER DRIVE 30.00 FEET; THENCE S. 89°47'06" E. ALONG SAID BUCKNER DRIVE 160.00 FEET; THENCE N. 00°12'54" E. ALONG SAID BUCKNER DRIVE 160.00 FEET; THENCE N. 45°12'54" E. 50.00 FEET; THENCE S. 81°59'10" E. 503.14 FEET TO THE NORTHWESTERLY LINE OF GRAND TRUNK WESTERN RAILROAD; THENCE S. 29°50'45" W. ALONG SAID NORTHWESTERLY LINE 547.37 FEET; THENCE N. 60°09'15" W. 495.37 FEET; THENCE N. 21°17'17" W. 143.58 FEET TO THE POINT OF BEGINNING.

4. DESCRIPTION OF PORTION OF PARCEL #0067-00-130-0 TO BE USED FOR RIGHT-OF-WAY (TAP):

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 17, TOWN 2 SOUTH, RANGE 8 WEST, CALHOUN COUNTY, MICHIGAN; THENCE N. 89°57'32" E. ALONG THE SOUTH LINE OF SAID SECTION, 433.03 FEET; THENCE N. 00°54'42" W. ALONG THE EASTERLY LINE OF MARTIN LUTHER KING, Jr. HIGHWAY, 928.00 FEET; THENCE N. 89°05'18" E. 100.00 FEET; THENCE N. 00°54'42" W. ALONG THE EASTERLY LINE OF BUCKNER DRIVE, 1448.35 FEET; THENCE CONTINUING NORTHEASTERLY 1025.28 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE, AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 1011.74 FEET, AND WHOSE CHORD BEARS N. 28°07'11" E. 981.97 FEET; THENCE N. 57°09'04" E. ALONG THE EASTERLY LINE OF BUCKNER DRIVE, 343.40 FEET; THENCE CONTINUING NORTHEASTERLY 552.30 FEET ALONG THE EASTERLY LINE OF BUCKNER DRIVE AND THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 991.74 FEET AND WHOSE CHORD BEARS N. 73°06'19" E. 545.19 FEET; THENCE S. 21°17'17" E. 50.50 FEET TO THE POINT OF BEGINNING; THENCE SOUTHEASTERLY 83.23 FEET ALONG THE ARC OF A CURVE TO THE RIGHT WHOSE RADIUS IS 540.00 FEET AND WHOSE CHORD BEARS S. 54°53'59" E. 83.15 FEET; THENCE S. 50°29'03" E. 263.47 FEET; THENCE SOUTHEASTERLY 77.63 FEET ALONG THE ARC OF A CURVE TO THE LEFT WHOSE RADIUS IS 460.00 FEET AND WHOSE CHORD BEARS S. 55°19'09" E. 77.54 FEET; THENCE N. 60°09'15" W. 347.32 FEET; THENCE N. 21°17'17" W. 93.08 FEET TO THE POINT OF BEGINNING. CONTAINING 0.23 ACRES OF LAND, MORE OR LESS.

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DATE	PROJ NUMBER	DSG	PROJ MGR	CADD	COUNTY	MUNICIPALITY
	1553-18-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
SYSTEX - EXISTING CONDITIONS & DEMOLITION PLAN

SHEET SS-111

DRAWING PATH: P:\1000_1999\10531800\10_buckner_drive_overpass\0Drawings\Civil\Plans_Const\180010SUR_SITE_DESIGN.dwg JUL 09, 2018 - 4:57pm

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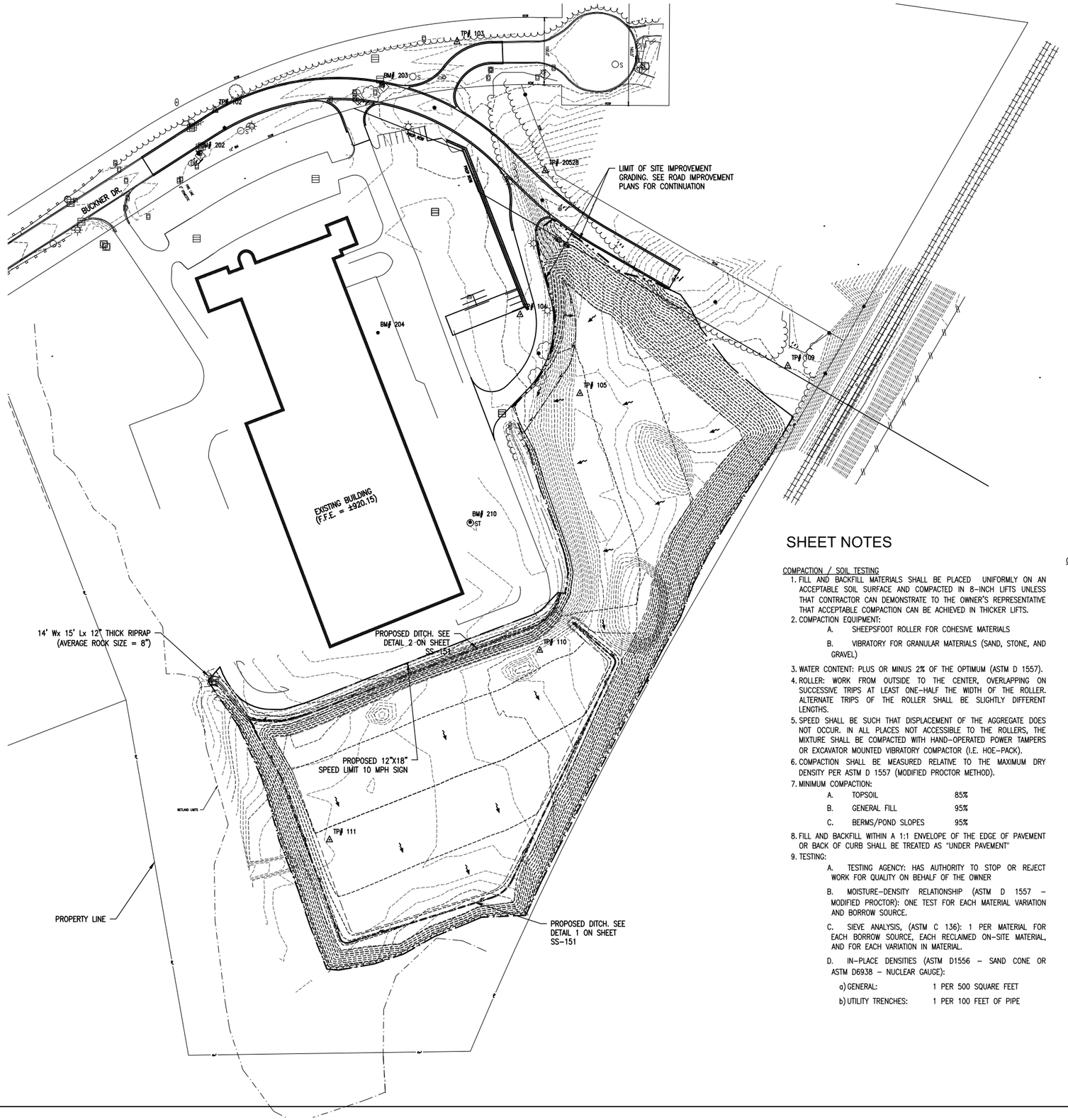

N

GRAPHIC SCALE: 1 inch = 80 feet
0 40 80 160 240

EARTHWORK TABLE

	SITE IMPROVEMENTS	ROAD IMPROVEMENTS	TOTAL
EXCAVATION	113,072 CY	1,958 CY	115,030 CY
STRIPING TOPSOIL**	12,952 CY	--	12,952 CY
EMBANKMENT (COMPACTED VOLUME)	472 CY	6,151 CY	6,623 CY
EMBANKMENT (BANK VOLUME)*	543 CY	7,073 CY	7,616 CY
NET	112,529 CY (CUT)	5,115 CY (FILL)	107,414 CY (CUT)

* IT IS ASSUMED A BANK – COMPACTED CONVERSION FACTOR OF 1.15
** IT ASSUMED 12" DEPTH OF EXISTING TOPSOIL
(FOR CONTRACTOR REFERENCE ONLY)

SHEET NOTES

COMPACTION / SOIL TESTING

1. FILL AND BACKFILL MATERIALS SHALL BE PLACED UNIFORMLY ON AN ACCEPTABLE SOIL SURFACE AND COMPACTED IN 8-INCH LIFTS UNLESS THAT CONTRACTOR CAN DEMONSTRATE TO THE OWNER'S REPRESENTATIVE THAT ACCEPTABLE COMPACTION CAN BE ACHIEVED IN THICKER LIFTS.
2. COMPACTION EQUIPMENT:
   A. SHEEPSFOOT ROLLER FOR COHESIVE MATERIALS
   B. VIBRATORY FOR GRANULAR MATERIALS (SAND, STONE, AND GRAVEL)
3. WATER CONTENT: PLUS OR MINUS 2% OF THE OPTIMUM (ASTM D 1557).
4. ROLLER: WORK FROM OUTSIDE TO THE CENTER, OVERLAPPING ON SUCCESSIVE TRIPS AT LEAST ONE-HALF THE WIDTH OF THE ROLLER. ALTERNATE TRIPS OF THE ROLLER SHALL BE SLIGHTLY DIFFERENT LENGTHS.
5. SPEED SHALL BE SUCH THAT DISPLACEMENT OF THE AGGREGATE DOES NOT OCCUR. IN ALL PLACES NOT ACCESSIBLE TO THE ROLLERS, THE MIXTURE SHALL BE COMPACTED WITH HAND-OPERATED POWER TAMPERS OR EXCAVATOR MOUNTED VIBRATORY COMPACTOR (I.E. HOE-PACK).
6. COMPACTION SHALL BE MEASURED RELATIVE TO THE MAXIMUM DRY DENSITY PER ASTM D 1557 (MODIFIED PROCTOR METHOD).
7. MINIMUM COMPACTION:
   A. TOPSOIL 85%
   B. GENERAL FILL 95%
   C. BERMS/POND SLOPES 95%
8. FILL AND BACKFILL WITHIN A 1:1 ENVELOPE OF THE EDGE OF PAVEMENT OR BACK OF CURB SHALL BE TREATED AS "UNDER PAVEMENT"
9. TESTING:
   A. TESTING AGENCY: HAS AUTHORITY TO STOP OR REJECT WORK FOR QUALITY ON BEHALF OF THE OWNER
   B. MOISTURE-DENSITY RELATIONSHIP (ASTM D 1557 – MODIFIED PROCTOR): ONE TEST FOR EACH MATERIAL VARIATION AND BORROW SOURCE.
   C. SIEVE ANALYSIS, (ASTM C 136): 1 PER MATERIAL FOR EACH BORROW SOURCE, EACH RECLAIMED ON-SITE MATERIAL, AND FOR EACH VARIATION IN MATERIAL.
   D. IN-PLACE DENSITIES (ASTM D1556 – SAND CONE OR ASTM D6938 – NUCLEAR GAUGE):
      a) GENERAL: 1 PER 500 SQUARE FEET
      b) UTILITY TRENCHES: 1 PER 100 FEET OF PIPE

GRADING AND RESTORATION

1. SUBMIT RESTORATION PROCEDURE, SEEDS, FERTILIZERS, AND/OR PLANTS TO THE ENGINEER FOR APPROVAL PRIOR TO EXECUTING THE WORK.
2. ALL DISTURBED UNPAVED LAWN AREAS ARE TO RECEIVE AT LEAST 3" OF TOPSOIL, THE CONTRACTOR MAY USE SOD, SEED AND MULCH, OR HYDROSEED, UNLESS OTHERWISE NOTED. THESE AREAS SHALL BE WATERED BY THE CONTRACTOR UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
3. TOPSOIL PLACEMENT:
   A. BEFORE SPREADING THE TOPSOIL, ASSURE THAT ALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES ARE IN PLACE AND FUNCTIONING PROPERLY. THESE PRACTICES MUST BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.
   B. GRADING – MAINTAIN GRADES ON THE AREAS TO BE TOPSOILED ACCORDING TO THE APPROVED PLAN AND DO NOT ALTER THEM BY ADDING TOPSOIL.
   C. IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, LOOSEN OR SCARIFY THE SUBGRADE TO A DEPTH OF AT LEAST 4 INCHES.
   D. TOPSOIL SHALL NOT BE SPREAD WHILE IT IS FROZEN OR MUDDY OR WHEN THE SUBSOIL IS FROZEN OR MUDDY.
   E. COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT AVOID EXCESSIVE COMPACTION, AS IT INCREASES RUNOFF AND INHIBITS SEED GERMINATION AND SEEDLING GROWTH.
4. ALL DISTURBED DETENTION AREAS ARE TO BE SEEDED AND MULCHED USING AN APPROVED SEED MIX.
5. ALL PROPOSED SLOPES ARE TO BE GRADED TO 4H:1V OR FLATTER, UNLESS OTHERWISE INDICATED ON SHEETS.
6. SPOT ELEVATIONS SHOWN INDICATE FINISHED PAVEMENT ELEVATIONS UNLESS OTHERWISE NOTED. ELEVATIONS SHOWN AT STRUCTURES ARE TO FINISH GRADE UNLESS OTHERWISE INDICATED.
7. FINISHED GRADING SHALL BE COMPLETED ACCORDING TO THE GRADING PLAN CONTOURS AND SPOT GRADES. THE CONTRACTOR SHALL UNIFORMLY GRADE AREAS WITHIN LIMITS OF GRADING, INCLUDING ADJACENT TRANSITION AREAS. PROVIDE A SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCES, WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS, WHERE ELEVATIONS ARE SHOWN, OR BETWEEN SUCH POINTS, AND EXISTING GRADES. AREAS THAT HAVE BEEN FINISH GRADED SHALL BE PROTECTED FROM SUBSEQUENT CONSTRUCTION OPERATIONS.
8. AFTER THE SITE GRADING IS COMPLETED, IF EXCESS SOIL MATERIAL OR DEMOLITION DEBRIS EXISTS, THE CONTRACTOR SHALL DISPOSE OF ALL EXCESS SOIL AND DEBRIS MATERIAL IN A MANNER ACCEPTABLE TO THE OWNER AND THE REGULATING AGENCIES INVOLVED.
9. DISTURBED AREAS SHALL BE SLOPED AND GRADED TO RESTORE ORIGINAL DRAINAGE PATTERNS, OR PROVIDE POSITIVE DRAINAGE WHERE NEEDED.
10. RESTORATION OF NON-PAVED AREAS SHALL BE WITH SALVAGED OR IMPORTED TOPSOIL AND PLANTED IN ACCORDANCE WITH THE LANDSCAPE PLANS OR SEEDED AND MULCHED. SEEDED SLOPES GREATER THAN 1V:6H SHALL BE STABILIZED WITH SEED AND STAKED MULCH BLANKETS.

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DATE | PROJ NUMBER 1055-18-0010 | ENG Value | PROJ MGR Value | CADD Value | COUNTY Value | MUNICIPALITY Value

CITY OF BATTLE CREEK
BUCKNER DR

SYSTEX - SITE LAYOUT & OVERALL GRADING PLAN

SHEET SS-150

DRAWING PATH: P:\1000_1999\1053180010_buckner_drive_overpass\Drawings\CivilPlans_Const\180010GRD_SITE_DESIGN.dwg Jul 09, 2018 - 4:57pm

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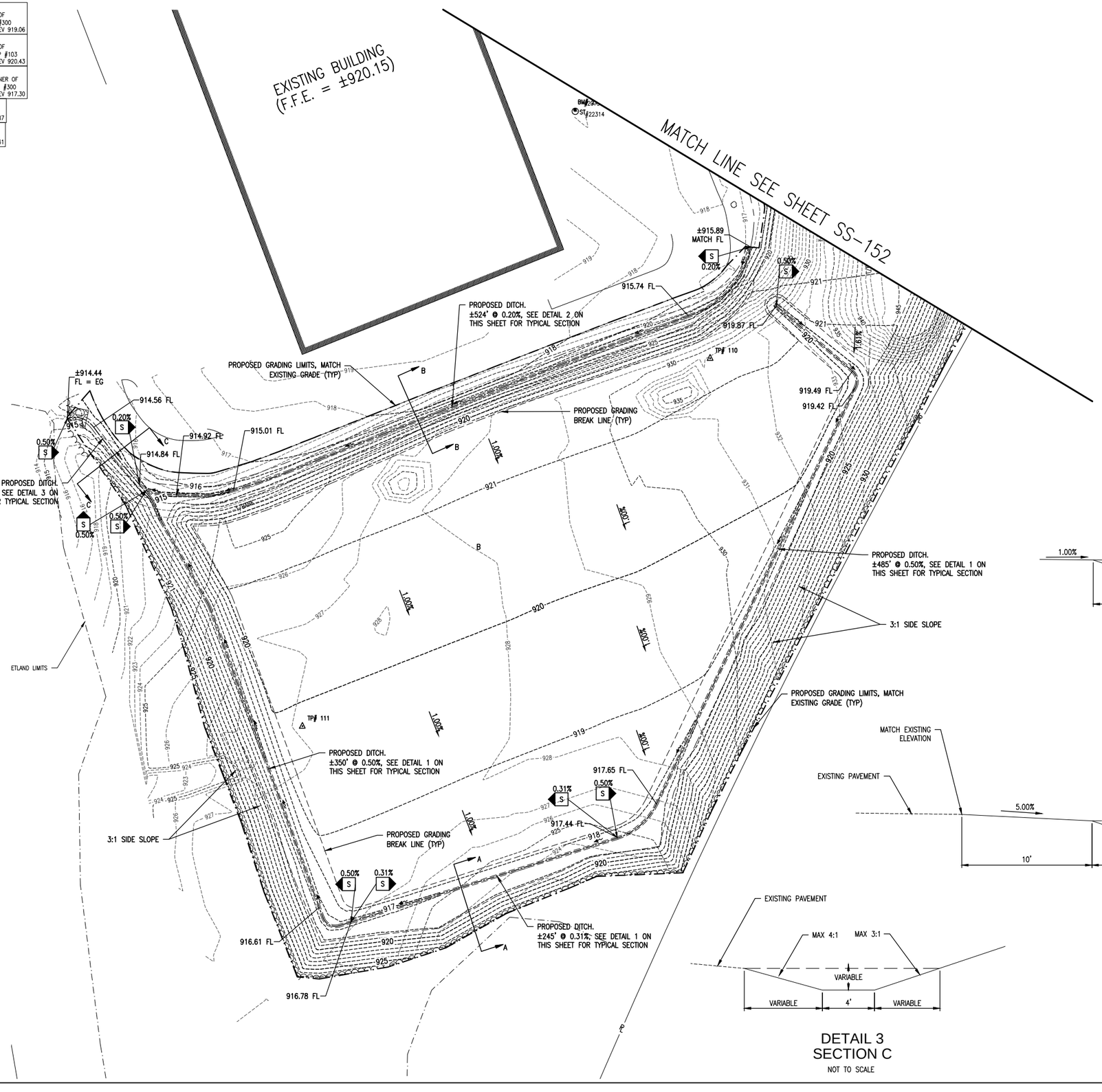
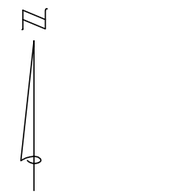
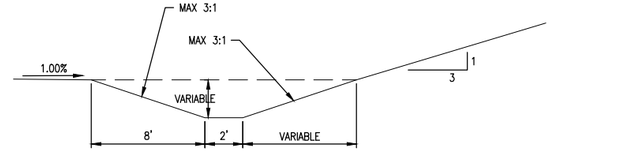




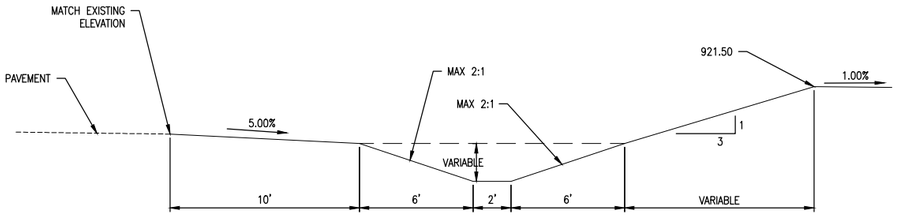
GRAPHIC SCALE: 1 inch = 40 feet
0 20 40 80 120

LEGEND

FL	FLOW LINE
EG	EXISTING GRADE
920.25 FL	PROPOSED SPOT GRADE
925 / 924	EXISTING CONTOURS
925 / 924	PROPOSED CONTOURS
	GRADING LIMITS (MATCH EXISTING GRADE)
	GRADING BREAK LINE
X.XX% S	DITCH SLOPE



DETAIL 1
SECTION A
NOT TO SCALE



DETAIL 2
SECTION B
NOT TO SCALE

DETAIL 3
SECTION C
NOT TO SCALE

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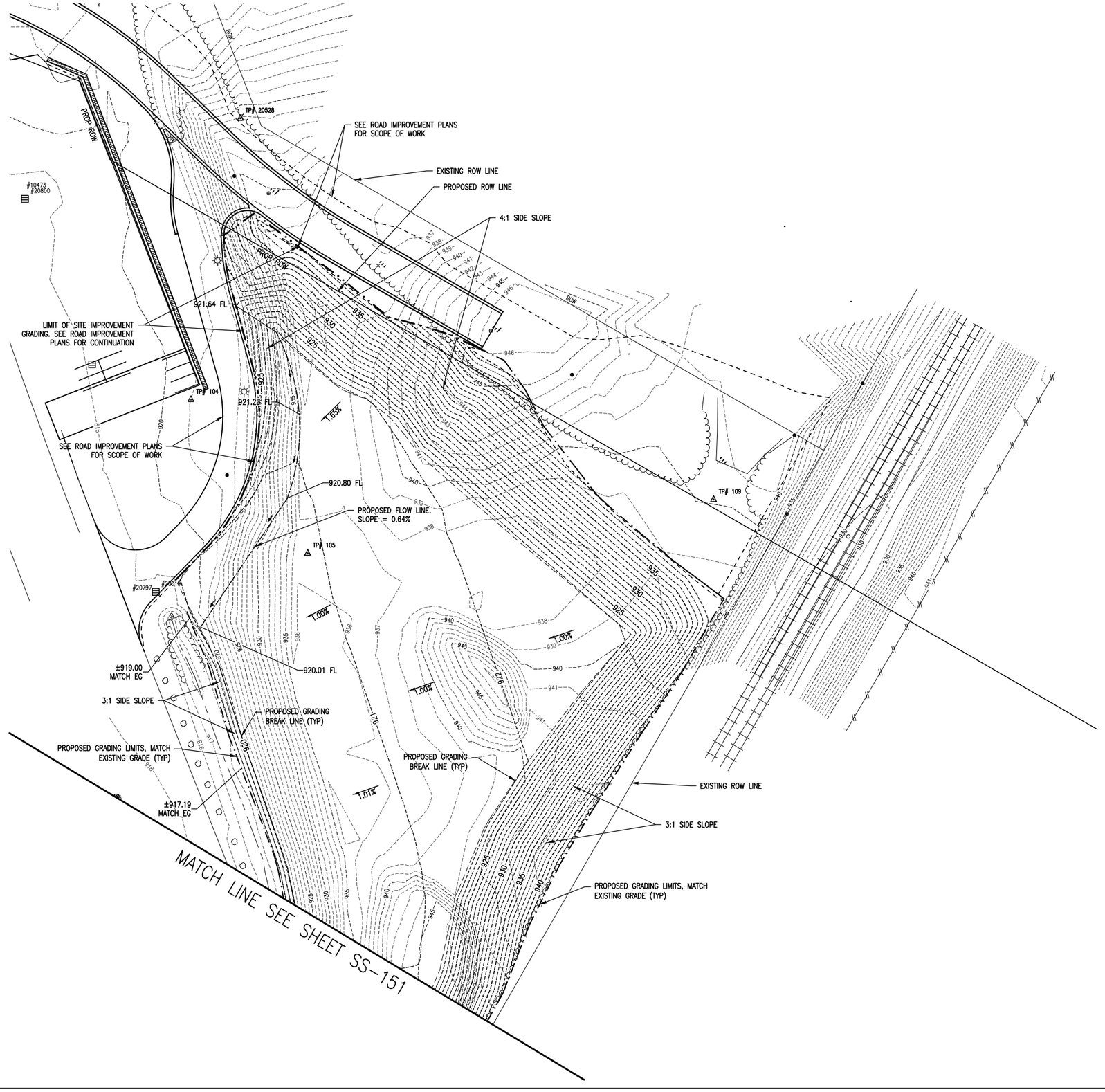
	1053-16-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
SYSTEX - GRADING PLAN SOUTHERN ENLARGEMENT

SHEET SS-151

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010GRD_SITE_DESIGN.dwg Jul 09, 2018 - 5:04pm

JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300 ELEV 919.06
JOB BENCHMARK #203 SET ARROW ON HYD S SIDE OF BUCKNER +/- 175' W OF TP #103 ELEV 920.43
JOB BENCHMARK #204 SET PAINTED "X" ON SE CORNER OF GEN PAD ON E GACE OF BLD #300 ELEV 917.30
TRAVERSE POINT #102 N 292708.63 E 12878253.15 ELEV 916.87
TRAVERSE POINT #103 N 292810.73 E 12878613.59 ELEV 918.31



GRAPHIC SCALE: 1 inch = 40 feet

0 20 40 80 120

LEGEND

FL	FLOW LINE
EG	EXISTING GRADE
920.25 FL	PROPOSED SPOT GRADE
925 / 924	EXISTING CONTOURS
925 / 924	PROPOSED CONTOURS
	GRADING LIMITS (MATCH EXISTING GRADE)
	GRADING BREAK LINE

OHM

ARCHITECTS ENGINEERS PLANNERS

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OHM-ADVISORS.COM

REVISIONS

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	MUNICIPALITY
	1053-18-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR

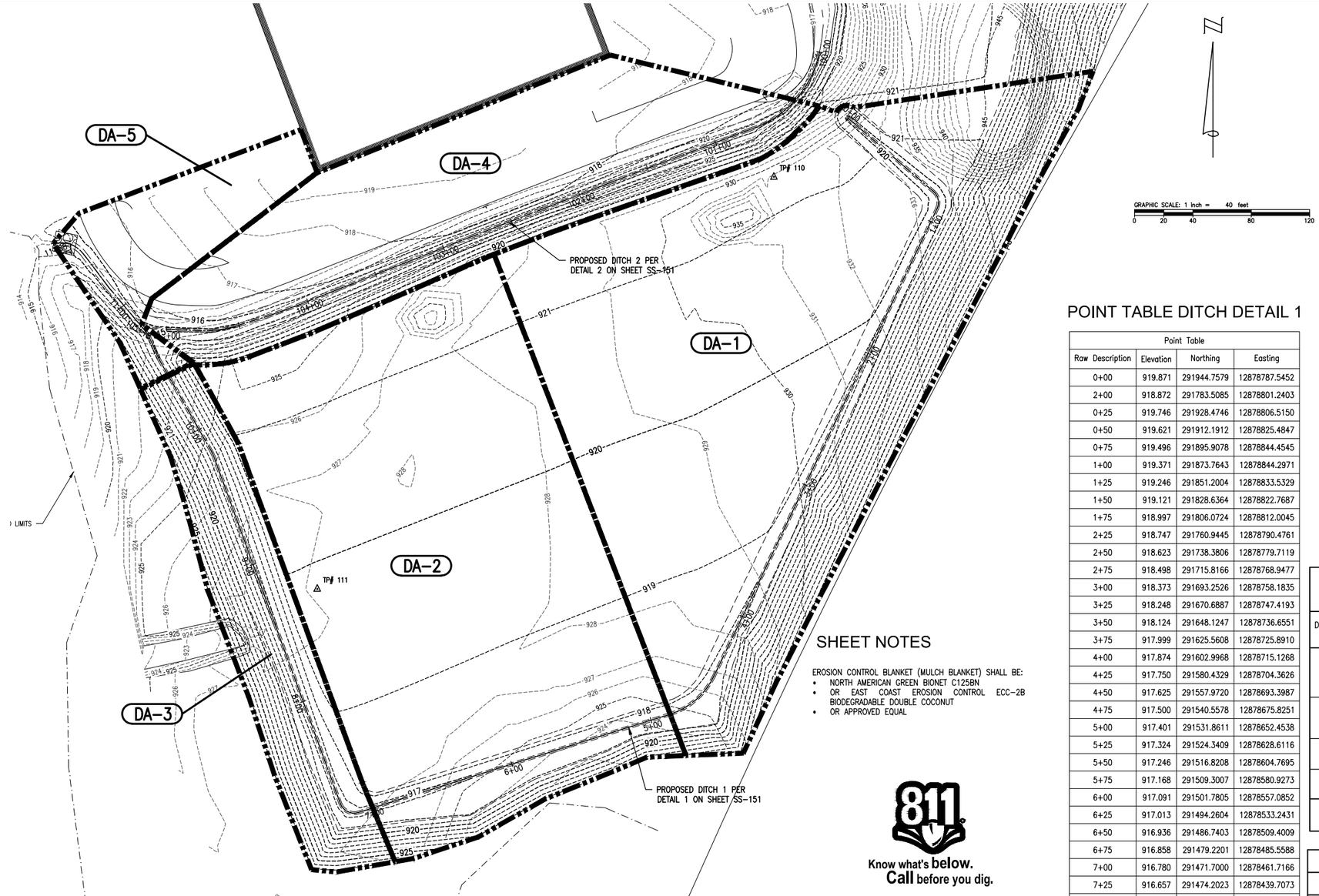
SYSTEX - GRADING PLAN NORTHERN ENLARGEMENT

SHEET SS-152

Know what's **below.** **Call** before you dig.

DRAWING PATH: P:\11000_-19991\1053\18-0010_buckner_drive_overpass\Drawings\Civil\Plans_Const\18-0010GRD_SITE_DESIGN.dwg Jul 09, 2018 - 4:58pm

TRAVERSE POINT #110		
N 291904.40		
E 12878736.72	ELEV 931.28	
TRAVERSE POINT #111		
N 291621.85		
E 12878423.63	ELEV 927.59	



SHEET NOTES

EROSION CONTROL BLANKET (MULCH BLANKET) SHALL BE:
- NORTH AMERICAN GREEN BIONET C125BN
- OR EAST COAST EROSION CONTROL ECC-2B BIODEGRADABLE DOUBLE COCONUT
- OR APPROVED EQUAL

Know what's **below.**
Call before you dig.

POINT TABLE DITCH DETAIL 1

Point Table			
Raw Description	Elevation	Northing	Easting
0+00	919.871	291944.7579	12878787.5452
2+00	918.872	291783.5085	12878801.2403
0+25	919.746	291928.4746	12878806.5150
0+50	919.621	291912.1912	12878825.4847
0+75	919.496	291895.9078	12878844.4545
1+00	919.371	291873.7643	12878844.2971
1+25	919.246	291851.2004	12878833.5329
1+50	919.121	291828.6364	12878822.7687
1+75	918.997	291806.0724	12878812.0045
2+25	918.747	291760.9445	12878790.4761
2+50	918.623	291738.3806	12878779.7119
2+75	918.498	291715.8166	12878768.9477
3+00	918.373	291693.2526	12878758.1835
3+25	918.248	291670.6887	12878747.4193
3+50	918.124	291648.1247	12878736.6551
3+75	917.999	291625.5608	12878725.8910
4+00	917.874	291602.9968	12878715.1268
4+25	917.750	291580.4329	12878704.3626
4+50	917.625	291557.9720	12878693.3987
4+75	917.500	291540.5578	12878675.8251
5+00	917.401	291531.8611	12878652.4538
5+25	917.324	291524.3409	12878628.6116
5+50	917.246	291516.8208	12878604.7695
5+75	917.168	291509.3007	12878580.9273
6+00	917.091	291501.7805	12878557.0852
6+25	917.013	291494.2604	12878533.2431
6+50	916.936	291486.7403	12878509.4009
6+75	916.858	291479.2201	12878485.5588
7+00	916.780	291471.7000	12878461.7166
7+25	916.657	291474.2023	12878439.7073
7+50	916.532	291497.6882	12878431.1399
7+75	916.407	291521.1743	12878422.5725
8+00	916.282	291544.6605	12878414.0051
8+25	916.157	291568.1414	12878405.4234
8+50	916.032	291591.6275	12878396.8560
8+75	915.907	291615.1137	12878388.2886
9+00	915.782	291638.5999	12878379.7211
9+25	915.657	291662.0860	12878371.1537
9+50	915.532	291685.5722	12878362.5863
9+75	915.407	291709.0583	12878354.0189
10+00	915.282	291731.2222	12878342.5744
10+25	915.157	291752.9551	12878330.2180
10+50	915.032	291774.6879	12878317.8615
10+75	914.907	291797.1546	12878306.9773
11+00	914.782	291816.3169	12878290.9255
11+25	914.657	291835.8307	12878275.3069
11+50	914.532	291855.3115	12878259.7200
11+68	914.444	291858.2632	12878243.1897

POINT TABLE DITCH DETAIL 2

Point Table			
Raw Description	Elevation	Northing	Easting
100+00	915.892	291990.0740	12878767.9300
100+25	915.843	291966.9517	12878758.7736
100+50	915.793	291948.4450	12878742.1607
100+75	915.744	291936.8454	12878720.1259
101+00	915.695	291928.0321	12878696.7659
101+25	915.646	291919.2072	12878673.3752
101+50	915.597	291910.2855	12878650.0214
101+75	915.547	291901.3546	12878626.6710
102+00	915.498	291892.2601	12878603.3840
102+25	915.449	291883.1913	12878580.0868
102+50	915.400	291874.1594	12878556.7754
102+75	915.350	291865.1215	12878533.4662
103+00	915.301	291855.9326	12878510.2163
103+25	915.252	291846.7238	12878486.9741
103+50	915.203	291837.5566	12878463.7155
103+75	915.153	291828.3935	12878440.4553
104+00	915.104	291819.1708	12878417.2187
104+25	915.055	291810.3791	12878393.8168
104+50	915.006	291802.8093	12878369.9971
104+75	914.956	291799.0909	12878345.4135
105+00	914.907	291799.9135	12878320.4287
105+18	914.873	291803.1166	12878303.4092

TIME OF CONCENTRATION (FOR SWALES DESIGN PURPOSES)

DRAINAGE AREA		TC (MIN)
DA-1	SHEET FLOW (PERVIOUS – GRASS) = 300 FT @ 1.00% = 52.14 MIN SHALLOW FLOW (PERVIOUS – GRASS) = 27 FT @ 1.00% = 0.28 MIN	
	TOTAL:	52.42
DA-2	SHEET FLOW (PERVIOUS – GRASS) = 300 FT @ 1.00% = 52.14 MIN SHALLOW FLOW (PERVIOUS – GRASS) = 10 FT @ 1.00% = 0.10 MIN	
	TOTAL:	52.24
DA-3	SHEET FLOW (PERVIOUS – GRASS) = 35 FT @ 33.00% = 2.42 MIN	
	TOTAL:	5.00*
DA-4	ASSUMED 15.00 min	
	TOTAL:	15.00
DA-5	ASSUMED 15.00 min	
	TOTAL:	15.00

DRAINAGE MANAGEMENT AREA SUMMARY

DRAINAGE AREA	AREAS	SF	ACRES	C
DA-1	PERVIOUS AREA – GRASS SLOPE = 1.00%	58,462	1.34	0.25
	PERVIOUS AREA – GRASS SLOPE > 7.0%	33,590	0.77	0.40
	TOTAL:	92,052	2.11	0.30
DA-2	PERVIOUS AREA – GRASS SLOPE = 1.00%	67,712	1.55	0.25
	PERVIOUS AREA – GRASS SLOPE > 7.0%	8,915	0.20	0.40
	TOTAL:	76,627	1.75	0.27
DA-3	PERVIOUS AREA – GRASS SLOPE > 7.0%	18,546	0.43	0.40
	TOTAL:	18,546	0.43	0.40
DA-4	PERVIOUS AREA – GRASS SLOPE > 7.0%	16,115	0.37	0.30
	IMPERVIOUS PAVEMENT	23,243	0.53	0.95
	TOTAL:	39,358	0.90	0.68
DA-5	PERVIOUS AREA – GRASS SLOPE > 7.0%	3,373	0.08	0.40
	IMPERVIOUS PAVEMENT	8,346	0.19	0.95
		11,719	0.27	0.79
	TOTAL:	238,302	5.46	0.39

PROPOSED STORM CHANNEL CALCULATIONS – 10-YEAR STORM

SECTION	SECTION TYPE	LINING TYPE	BOTTOM WIDTH (FT)	SIDE SLOPES (Z:1)	TOTAL DEPTH (FT)	SLOPE (%)	"n"	INCREASE AREA (ACRES)	DRAINAGE AREA TOTAL (ACRES)	"C"	TC (min)	RAIN i (IN/H)	TOTAL FLOW (CFS)	FLOW CAPACITY (CFS)	WATER DEPTH (FT)	VELOCITY (FTS)	WET AREA (SFT)	WET PERIMETER (FT)	FREEBOARD (FT)	TIME OF RUNNING	CHANNEL SHEAR STRESS (LB/SFT)	LINING ALLOWABLE STRESS (LB/SFT)
DITCH DETAIL 1 ST 0+00 – 4+86	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 3:1)	VARIABLE (MIN 0.60')	0.50	0.035	2.11	2.11	0.30	52.42	1.86	1.18	8	0.26	0.86	1.37	8.52	0.34	–	0.08	2.00**
DITCH DETAIL 1 ST 4+86 – 7+00	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 3:1)	VARIABLE (MIN 0.60')	0.31	0.035	1.75	3.86	0.29	52.42	1.86	2.08	8	0.37	0.85	2.45	11.28	0.23	4.19	0.07	2.00**
DITCH DETAIL 1 ST 7+00 – 10+81	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 3:1)	VARIABLE (MIN 1.00')	0.50	0.035	0.43	4.29	0.30	56.71	1.71	2.20	14	0.43	1.26	1.74	6.20	0.57	5.12	0.13	2.00**
DITCH DETAIL 2 ST 100+00 – 105+18	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 2:1)	VARIABLE (MIN 1.00')	0.20	0.035	0.90	0.90	0.68	15.0	3.72	2.28	6	0.60	1.00	2.28	5.79	1.38	8.63	0.08	2.00**
DITCH DETAIL 1 ST 10+81 – 11+68	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	4	VARIABLE (MAX 3:1/4:1)	VARIABLE (MIN 1.00')	0.50	0.035	0.27	5.46	0.39	61.83	1.61	3.42	17	0.44	1.40	2.44	7.21	0.56	1.04	0.14	2.00**

* PER MICHIGAN NPS ROLLED EROSION CONTROL PRODUCTS, TABLE 1.
** SHEAR STRESS UNVEGETATED ROLLED EROSION CONTROL PRODUCT CAN SUSTAIN WITHOUT PHYSICAL DAMAGE OR EXCESSIVE EROSION (>12.7 MM (0.5 IN) SOIL LOSS) DURING A 30-MINUTE FLOW EVENT, BASED ON HISTORICAL EXPERIENCE AND LARGE-SCALE TESTING OF PRODUCTS WITH MANNING'S ROUGHNESS COEFFECIENTS OF 0.01–0.05.

OHM
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Livonia, MI 48150
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REVISIONS:

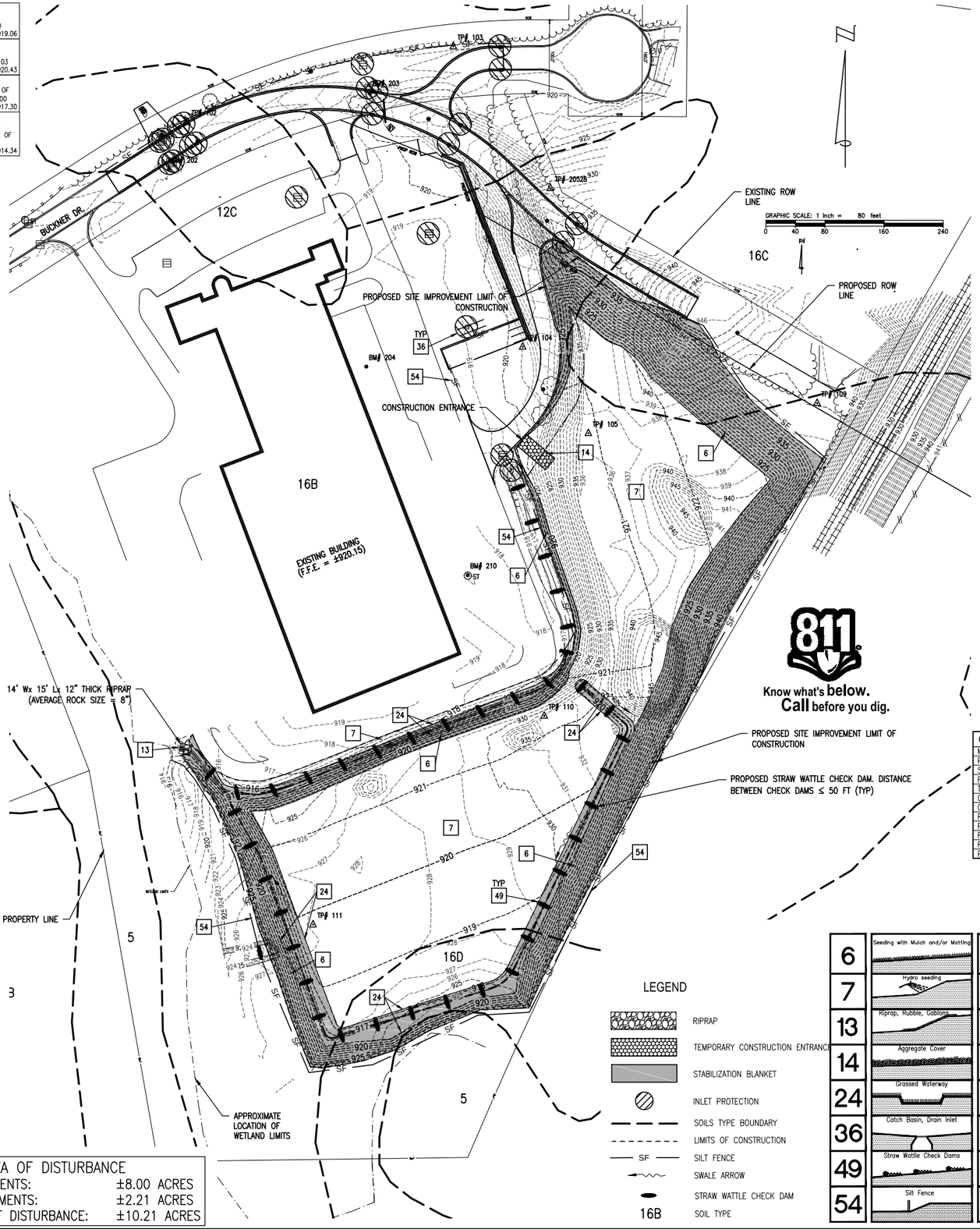
DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	MUNICIPALITY
	1053-TRADTO	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
SYSTEX - SITE STORM WATER DITCH PLAN

SHEET SS-160

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil Plans_Const\180010CHN.dwg Jul 09, 2018 - 4:58pm

JOB BENCHMARK #202 SET ARROW ON HYD S SIDE OF BUCKNER IN FRONT OF BLD #300	ELEV 919.06
JOB BENCHMARK #203 SET ARROW ON HYD S SIDE OF BUCKNER +/- 175' W OF TP #103	ELEV 920.43
JOB BENCHMARK #204 SET PAINTED "X" ON SE CORNER OF GEN PAD ON E GACE OF BLD #300	ELEV 917.30
JOB BENCHMARK #210 SET CHISELED "X" ON NORTH RIM OF STORM MH IN SOUTHERN SIDE OF TRUCK BAY PARKING	ELEV 914.34
TRAVERSE POINT #15 N 291550.31 E 12878433.60	ELEV 927.59
TRAVERSE POINT #102 N 292708.63 E 12878253.15	ELEV 916.87
TRAVERSE POINT #103 N 292810.73 E 12878613.59	ELEV 918.31
TRAVERSE POINT #104 N 292404.08 E 12878707.53	ELEV 921.15
TRAVERSE POINT #105 N 292286.85 E 12878796.57	ELEV 936.64
TRAVERSE POINT #109 N 292327.84 E 12879106.26	ELEV 940.74
TRAVERSE POINT #110 N 291904.40 E 12878736.72	ELEV 931.28
TRAVERSE POINT #111 N 291621.85 E 12878423.63	ELEV 927.59
TRAVERSE POINT #20528 N 292618.61 E 12878745.20	ELEV 931.16



AREA OF DISTURBANCE	
SITE IMPROVEMENTS:	±8.00 ACRES
ROAD IMPROVEMENTS:	±2.21 ACRES
TOTAL AREA OF DISTURBANCE:	±10.21 ACRES

LEGEND

- RIPRAP
- TEMPORARY CONSTRUCTION ENTRANCE
- STABILIZATION BLANKET
- INLET PROTECTION
- SOILS TYPE BOUNDARY
- LIMITS OF CONSTRUCTION
- SF — SILT FENCE
- SWALE ARROW
- STRAW WATTLE CHECK DAM
- 16B SOIL TYPE

6	Seeding with Mulch and/or Matting	Facilitates establishments of vegetative cover Effective for drainageways with low velocity. Easily placed in small quantities by inexperinced personnel. Shall include prepared topsoil be and straw mulch. Shall use a Mulch Blanket when slopes are 6H:1V or steeper. PERMANENT MEASURE
7	Hydro seeding	Effective on large areas. Mulch tacking agent used to provide immediate protection until grass is rooted. Shall include prepared topsoil bed. PERMANENT MEASURE
13	Riprap, Rubble, Cablorks	Used where vegetation is not easily established. Effective for high velocities or high concentrations. Permits runoff to infiltrate soil. Dissipates energy flow at system outlets. PERMANENT MEASURE
14	Aggregate Cover	Tracking Mat – replenish stone as required due to rutting. 1"–3" crushed concrete 8" thick on geo-fabric. 25' wide by 50' long. Temporary measure, remove after completion of construction. TEMPORARY MEASURE
24	Grassed Waterway	Much more stable form of drainageway than bare channel. Grass tends to slow runoff and filter out sediment. Used where bare channel would be eroded. Use a Turf mulch blanket to reduce erosion and protect seeding. PERMANENT MEASURE
36	Catch Basin, Drain Inlet	Collects high velocity concentrated runoff. Use Inlet Filter Sack as TEMPORARY MEASURE PERMANENT MEASURE
49	Straw Wattle Check Dams	Reduces flow velocity. Catches sediment. Constructed with straw Distance between checks dams ≤ 50 ft. TEMPORARY MEASURE
54	Silt Fence	Filters and detains runoff. Shown on plan as — SF — TEMPORARY MEASURE

SUPPLEMENTAL SOIL EROSION CONTROL NOTES:

1. ALL EXISTING AND PROPOSED CATCH BASINS SHALL HAVE INLET FILTERS INSTALLED DURING THE DURATION OF CONSTRUCTION.
2. SOILS ONSITE CONSIST OF THE FOLLOWING:
   - 5 PALMS MUCK, 0 TO 1 PERCENT SLOPES
   - 12C COLOMA LOAMY SAND, 6 TO 12 PERCENT SLOPES
   - 16B OSHTEMO SANDY LOAM, 0 TO 6 PERCENT SLOPES
   - 16C OSHTEMO SANDY LOAM, 6 TO 12 PERCENT SLOPES
   - 16D OSHTEMO SANDY LOAM, 12 TO 18 PERCENT SLOPES
3. APPROXIMATE LOCATION OF SOILS ARE SHOWN IN PLAN VIEW.
4. NO FLOODPLAINS ARE ON THE SITE
5. WETLAND AREAS ARE PRESENT ON THE SITE, THE CONTRACTOR SHALL TAKE NECESSARY STEPS TO PROTECT WETLAND AREAS AND KEEP CONSTRUCTION ACTIVITIES OUTSIDE THE WETLAND LIMITS, UNLESS SPECIFICALLY NOTED OTHERWISE AND APPROVED AS PART OF A PERMIT.
6. SWALES AND DITCHES SHALL RECEIVE PERMANENT STABILIZATION (SEED AND MULCH BLANKETS) WITHIN 5 DAYS OF FINAL GRADE.
7. EROSION CONTROL BLANKETS (MULCH BLANKETS) SHALL BE:
   - NORTH AMERICAN GREEN BIONET C125BN
   - OR EAST COAST EROSION CONTROL ECC–2B BIODEGRADABLE DOUBLE COCONUT
   - OR APPROVED EQUAL
8. ROW DITCHES AND GREEN SPACE SHALL BE STABILIZED WITHIN 5 DAYS OF COMPLETING GRADING.
9. RIP–RAP MUST BE INSTALLED WITHIN 24 HOURS OF OUTLET PLACEMENT.
10. RESTORATION OF DISTRBED AREAS NOT REQUIRING SEED AND MULCH BLANKETS SHALL BE RESTORED WITH SEED/MULCH OR HYDROSEED.

TASK	FREQUENCY	TRACKING MAT	SILT FENCE	CHECK DAMS	INLET FILTERS	STORM SEWER	CB SUMPS	VEGETATION
INSPECT FOR SEDIMENT ACCUMULATION	WEEKLY	X	X	X	X	X	X	
REMOVE ACCUMULATED SEDIMENT	AS NEEDED		X	X	X	X	X	
INSPECT FOR FLOATABLES AND DEBRIS	WEEKLY			X		X	X	
REMOVE FLOATABLES AND DEBRIS	AS NEEDED			X		X	X	
INSPECT FOR PERMIT CONFORMANCE	AFTER RAIN	X	X		X			
RESTORE TO PERMIT CONFORMANCE	WEEKLY	X	X		X			
INSPECT FOR SOIL EROSION	AFTER RAIN							X
RESTORE TO PREVENT EROSION	AS NEEDED							X
SCRAPE STREET/DRIVES	DAILY							
SWEEP STREET/DRIVES	WEEKLY							

SESC MAINTENANCE SCHEDULE

CONSTRUCTION PHASES	2018 SEP	OCT	NOV	DEC	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
MOBILIZATION	X											
PLACE SESC DEVICES / INSTALL TRACKING PAD	X											
STRIP AND STOCKPILE TOPSOIL	X	X	X	X								
ROUGH GRADING / SEDIMENT CONTROL	X	X	X	X								
TEMPORARY CONTROL MEASURES	X	X	X	X	X	X	X	X	X	X	X	X
CONSTRUCT STORMWATER FACILITIES		X	X									
CONSTRUCTION STORM SEWERS		X	X									
REMOVE CURB & GUTTER/ROAD GRADING	X	X	X									
PAVING		X	X	X								
RESTORATION/TURF ESTABLISHMENT		X	X	X	X	X	X	X	X	X	X	X
REMOVE SESC DEVICES												X
PROJECT COMPLETE												X

CONSTRUCTION DATES ARE SUBJECT TO CHANGE.
CONTRACTOR SHALL PROVIDE UPDATED SCHEDULE PRIOR TO CONSTRUCTION.

CONSTRUCTION SEQUENCE

SOILS EROSION, SEDIMENTATION CONTROL (SESC) AND STORMWATER POLLUTION PREVENTION (SWPP) NOTES:

1. LOCAL REGULATOR – CALHOUN ROAD DEPARTMENT (269) 781–9841
2. SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE
   A. NO DEMOLITION, CUTTING, GRADING, EXCAVATION, OR CONSTRUCTION SHALL BE PERFORMED PRIOR TO FULL IMPLEMENTATION OF CONTROL MEASURES.
   B. DESIGN, CONSTRUCT, AND COMPLETE THE EARTH CHANGE IN A MANNER THAT LIMITS THE EXPOSED AREA OF DISTURBED LAND FOR THE SHORTEST PERIOD OF TIME.
   C. REMOVE SEDIMENT CAUSED BY ACCELERATED SOIL EROSION FROM RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH CHANGE.
   D. TEMPORARY OR PERMANENT CONTROL MEASURES SHALL BE INSTALLED TO CONVEY WATER AROUND, THROUGH OR FROM THE EARTH CHANGE AT A NON–EROSIVE VELOCITY.
   E. INSTALL TEMPORARY SOIL AND SEDIMENTATION CONTROL MEASURES BEFORE OR UPON COMMENCEMENT OF THE EARTH CHANGE ACTIVITY AND MAINTAIN THE MEASURES ON A DAILY BASIS. REMOVE TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AFTER PERMANENT SOIL EROSION MEASURES ARE IN PLACE AND THE AREA IS STABILIZED. (STABILIZED MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING OR COVERING OF SOIL TO ENSURE RESISTANCE TO SOIL EROSION, SLIDING OR OTHER EARTH MOVEMENT.)
   F. COMPLETE PERMANENT SOIL EROSION CONTROL MEASURES FOR THE EARTH CHANGE WITHIN FIVE (5) CALENDAR DAYS AFTER FINAL GRADING OR UPON COMPLETION OF FINAL EARTH CHANGE. IF IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE THE EARTH CHANGE, THEN MAINTAIN TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IN PLACE AND STABILIZED.
   G. REMOVE AND DISPOSE OF ALL TEMPORARY CONTROL MEASURES AFTER RESTORATION IS COMPLETE.
3. SOIL EROSION AND SEDIMENTATION CONTROL MAINTENANCE NOTES
   A. INSTALL TEMPORARY INLET FILTERS AT ALL ADJACENT AND DOWN–GRADIENT STORM WATER INLETS, CATCH BASINS AND MANHOLES THAT MAY BE IMPACTED. CATCH BASIN INLET FILTERS SHALL BE MAINTAINED CLEAN AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD. IF A FILTER HAS HOLES OR IS INUNDATED WITH SEDIMENT, THE FILTER SHALL BE REPLACED BY THE CONTRACTOR.
   B. SILT FENCE SHALL BE MAINTAINED AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD. IF REPAIR OR REPLACEMENT IS NECESSARY, IT SHALL BE PERFORMED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS. MAINTENANCE INCLUDES THE REMOVING OF BUILT–UP SEDIMENT ACCUMULATES TO ½ THE HEIGHT OF THE FENCE. CONTRACTOR SHALL REMOVE, REPLACE, RETRENCH, OR RE–BACKFILL THE FENCE IF IT FAILS. ADDITIONALLY, THE CONTRACTOR SHALL REINSTALL ANY PORTION OF THE FENCING DAMAGED BY CONSTRUCTION MACHINERY.
   C. PLACE STOCKPILES AND OTHER SPOIL PILES AWAY FROM THE DRAINAGE SYSTEM TO MINIMIZE SEDIMENT TRANSPORT. IF THE STOCKPILE AND/OR SPOIL PILE MUST REMAIN ON–SITE OVERNIGHT, OR IF THE WEATHER CONDITIONS INDICATE THE CHANCE FOR PRECIPITATION, A) COVER THE PILE WITH WATER REPELLENT MATERIAL TO PREVENT EROSION AND/OR B) INSTALL SILT FENCING AROUND THE BASE OF THE PILE TO PREVENT TRANSPORT OF SEDIMENT TO THE STORM WATER SYSTEM, OR APPLY OTHER CONTROL METHODS APPROPRIATE TO THE SITE. CONTROL MEASURES TO GUARD AGAINST WIND EROSION MUST ALSO BE EMPLOYED, SUCH AS WETTING OR COVERING THE STOCKPILES. KEEP AS FEW STOCKPILES AS POSSIBLE DURING THE COURSE OF THE PROJECT.
   D. DITCHES AND SWALES SHALL HAVE CHECK DAMS INSTALLED AT REGULAR INTERVALS; CULVERT INLETS AND/OR SPILLWAYS SHALL BE PROTECTED WITH STONE BERMS OR STRAW BALES.
   E. THROUGHOUT THE CONSTRUCTION PERIOD, ALL MUD/SILT TRACKED ONTO EXISTING ROADS FROM THE SITE DUE TO CONSTRUCTION SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR.
   F. SEEDING OR OTHER STABILIZATION SHALL BE REQUIRED IMMEDIATELY TO AREAS DAMAGED BY RUNOFF.
   G. DUST CONTROL: PREVENT THE SPREAD OF DUST AND DEBRIS AND AVOID THE CREATION OF A NUISANCE IN THE SURROUNDING AREA. WATER SHALL BE THE ONLY APPROVED DUST CONTROL SUBSTANCE. DO NOT USE WATER IF IT RESULTS IN HAZARDOUS OR OBJECTIONABLE CONDITIONS SUCH AS, BUT NOT LIMITED TO, ICE, FLOODING, OR POLLUTION.
   H. INSPECTIONS BY THE OWNER OR A REGULATOR MAY OCCUR AND RESULT IN DIRECTION FOR MAINTENANCE OR EXPANSION OF INSTALLED MEASURES; CONTRACTOR SHALL COMPLY AT NO ADDITIONAL COST.
4. POLLUTION PREVENTION NOTES
   A. DURING WORK ACTIVITIES IF SUSPECT CONTAMINATED SOIL, GROUNDWATER, OR OTHER UNKNOWN MATERIAL IS ENCOUNTERED CONTACT THE OWNER'S REPRESENTATIVE IMMEDIATELY. SUSPECT CONTAMINATED SOIL MAY EXHIBIT CHEMICAL OR UNUSUAL ODORS, STAINING, UNUSUAL COLORING, AND/OR CONTAIN MAN–MADE DEBRIS. SUSPECT CONTAMINATED GROUNDWATER MAY EXHIBIT CHEMICAL OR UNUSUAL ODORS, UNUSUAL COLORING, AND/OR SHEEN. IMMEDIATELY CEASE ALL EXCAVATION, DEWATERING, TRANSPORT, OR DISTURBANCE OF THE SUSPECT MATERIAL UNTIL GIVEN DIRECTION BY THE OWNER'S REPRESENTATIVE.
   B. DISCHARGING POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE, AND OTHER HARMFUL WASTE INTO OR ALONGSIDE OF RIVERS, STREAMS, IMPOUNDMENTS OR INTO NATURAL OR MAN–MADE CHANNELS LEADING THERETO IS STRICTLY PROHIBITED. ANY SPILLS OR DISCHARGES AS DESCRIBED ABOVE SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY.
   C. CONTRACTOR SHALL NOT DISCHARGE TO THE SURFACE WATERS OF THE STATE ANY WASTEWATER GENERATED FROM CUTTING, GRINDING, DRILLING, OR HYDRODEMOLITION OF CONCRETE, INCLUDING ASPHALT WITHOUT AUTHORIZATION FROM THE OWNER.
   D. THE FOLLOWING REQUIREMENTS APPLY:
      - STORM DRAINS MUST BE PROTECTED FROM DUST AND DEBRIS.
      - ANY WATER USED DURING CONCRETE AND ASPHALT WORK (INCLUDING SWEEPING AND SAW–CUTTING) MUST BE CONTAINED AND COLLECTED FOR PROPER DISPOSAL. SUGGESTED CONTROLS INCLUDE WET VACUUM, OR ABSORBENTS.
      - GOOD HOUSEKEEPING PRACTICES MUST BE EMPLOYED AT THE JOBSITE. MINIMIZE DUST.
5. CONCRETE AND GROUT WASHOUT
   A. DO NOT DISCHARGE CONCRETE/GROUT WASHOUT INTO STORM DRAINS, CATCH BASINS OR TO THE SANITARY SEWER SYSTEM. PERFORM WASHING OF CONCRETE TRUCKS IN DESIGNATED AREAS OR AN APPROVED OFFSITE LOCATION.
   B. DESIGNATED AREAS SHOULD BE CLEARLY LABELED. THEY SHOULD BE IN A PIT TO PREVENT RUN–OFF OF WASTE WATER. PLACE DESIGNATED AREAS A MINIMUM OF 50 FEET FROM STORM DRAINS, BODIES OF WATER AND DITCHES. ALL DESIGNATED AREAS SHOULD BE LINED TO PREVENT SEEPAGE AND SHOULD HAVE A BARRIER.
   C. ALTERNATIVE TO A DESIGNATED AREA: PROVIDE A CONCRETE BOX. IF ONLY A SMALL OF CONCRETE WASHINGS IS TO OCCUR, ONE OPTION IS TO LINE A ROLL–OFF BOX. FOR VERY SMALL PROJECTS THIS COULD BE DONE WITH A DRUM.
   D. ONCE CONCRETE WASHOUT HAS HARDENED, BREAK UP AND DISPOSE OF PROPERLY. DISPOSAL OF HARDENED CONCRETE/GROUT SHOULD OCCUR ON A REGULAR BASIS.
   E. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES PROVIDED ONCE THE WASHOUT AREA IS 75% FULL.
6. DEWATERING: UNCONTAMINATED GROUNDWATER AND SURFACE WATER WHICH IS FREE OF SEDIMENT MAY BE DISCHARGED TO A STORM DRAIN. ALL DEWATERING OPERATIONS MUST USE A FILTER (DEWATERING) BAG CONNECTED TO THE END OF THE DISCHARGE PIPE. THE FINAL DISCHARGE MUST BE CLEAR (NO TURBIDITY) AND ON A CLEAN SURFACE (NOT ON EXPOSED SOILS) TO PREVENT THE DISCHARGE FROM PICKING UP SEDIMENT. THE STORM DRAIN INLET SHALL BE PROTECTED WITH AN INLET FILTER. THE CONTRACTOR SHALL ENSURE ROUTINE INSPECTION AND MAINTENANCE OF THE PUMP HOSES & FILTER BAGS DAILY, REPLACE EQUIPMENT WHEN SIGNS OF DETERIORATION ARE EVIDENT AND/OR IF INSTRUCTED BY THE CONSTRUCTION SITE STORM OPERATOR OR OWNER'S REPRESENTATIVE. IF THERE ARE INDICATIONS OF POSSIBLE CONTAMINATION, OR IF THE WATER IS TURBID, IMMEDIATELY CEASE DISCHARGE.

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DATE
PROJ NUMBER 1053-184010
ENG
PROJ MGR
CADD
COUNTY
MUNICIPALITY
Value

CITY OF BATTLE CREEK
BUCKNER DR
SYSTEX - SESC PLAN

SHEET SS-170

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil Plans_Const\180010SESC_SITE_DESIGN.dwg Jul 09, 2018 - 4:58pm

JOB BENCHMARK #200
TOP OF SE BOLT OF LT POLE W/ CONC BASE OFF E EDGE OF PARKING LOT, N OF DUMPSTER PAD
ELEV 892.35

JOB BENCHMARK #201
MARKED "X" ON S RIM OF SAN MH E OF EASTERN ASPH ENTRANCE TO NEXTHERMAL
ELEV 890.82

JOB BENCHMARK #202
SE BOLT ON YELLOW HYD OF S EDGE OF HARTS LAKE RD
ELEV 891.74

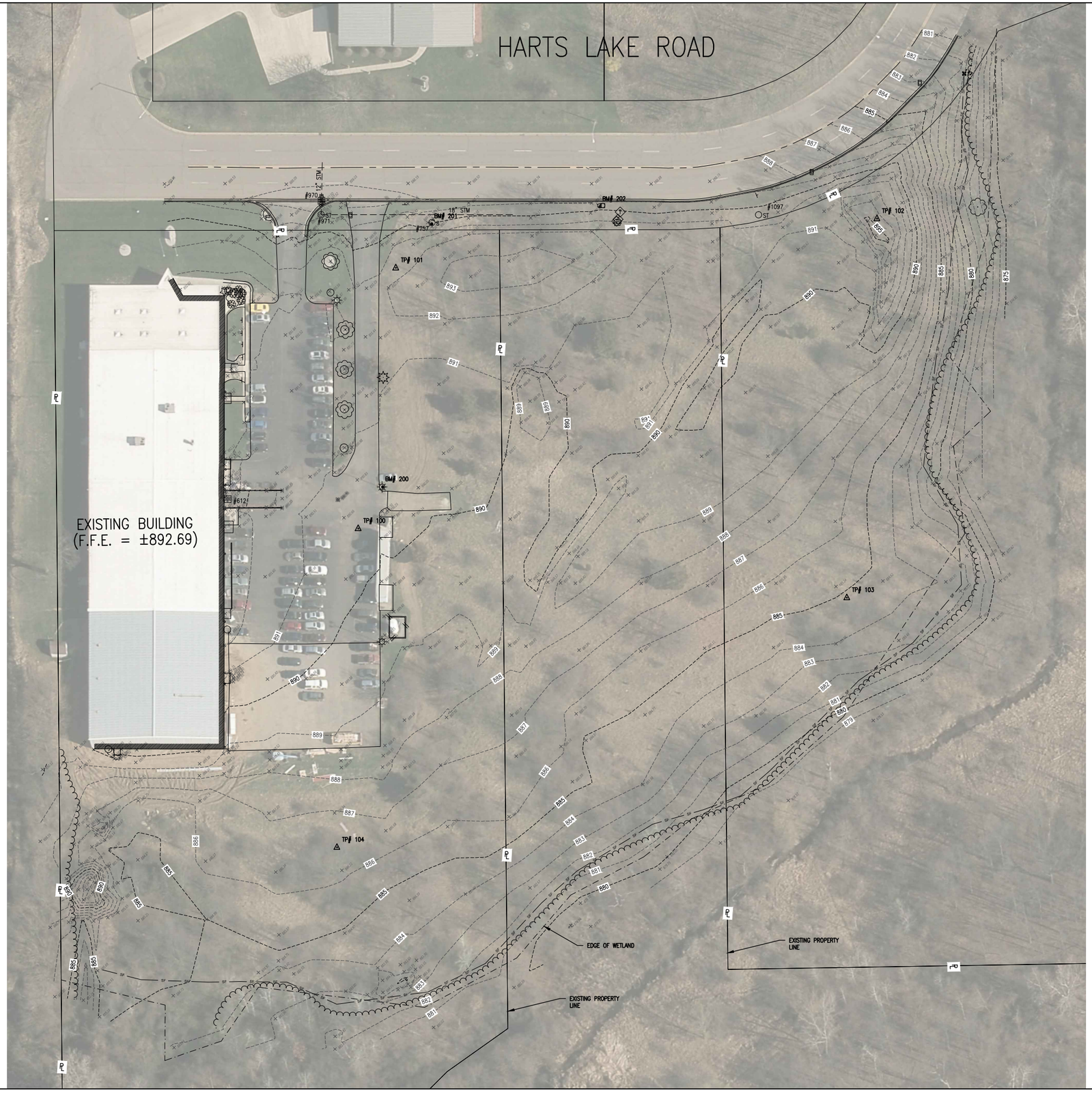
TRAVERSE POINT #100
N 299121.86
E 12877121.89 ELEV 890.56

TRAVERSE POINT #101
N 299323.37
E 12877150.97 ELEV 891.98

TRAVERSE POINT #102
N 299361.48
E 12877522.86 ELEV 895.43

TRAVERSE POINT #103
N 299068.37
E 12877499.64 ELEV 884.87

TRAVERSE POINT #104
N 298875.29
E 12877105.46 ELEV 887.20



N

GRAPHIC SCALE: 1 inch = 40 feet

0 20 40 80 120

Know what's **below.** **Call** before you dig.

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	0053-16-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR

NEXTHERMAL - EXISTING CONDITIONS, OVERALL VIEW

SHEET NS-110

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010SUR_SITE_NEXTH.dwg Jul 09, 2018 - 4:59pm

JOB BENCHMARK #200
TOP OF SE BOLT OF LT POLE W/ CONC BASE OFF E EDGE OF PARKING LOT, N OF DUMPSTER PAD
ELEV 892.35
JOB BENCHMARK #201
MARKED "X" ON S RIM OF SAN MH E OF EASTERN ASPH ENTRANCE TO NEXTHERMAL
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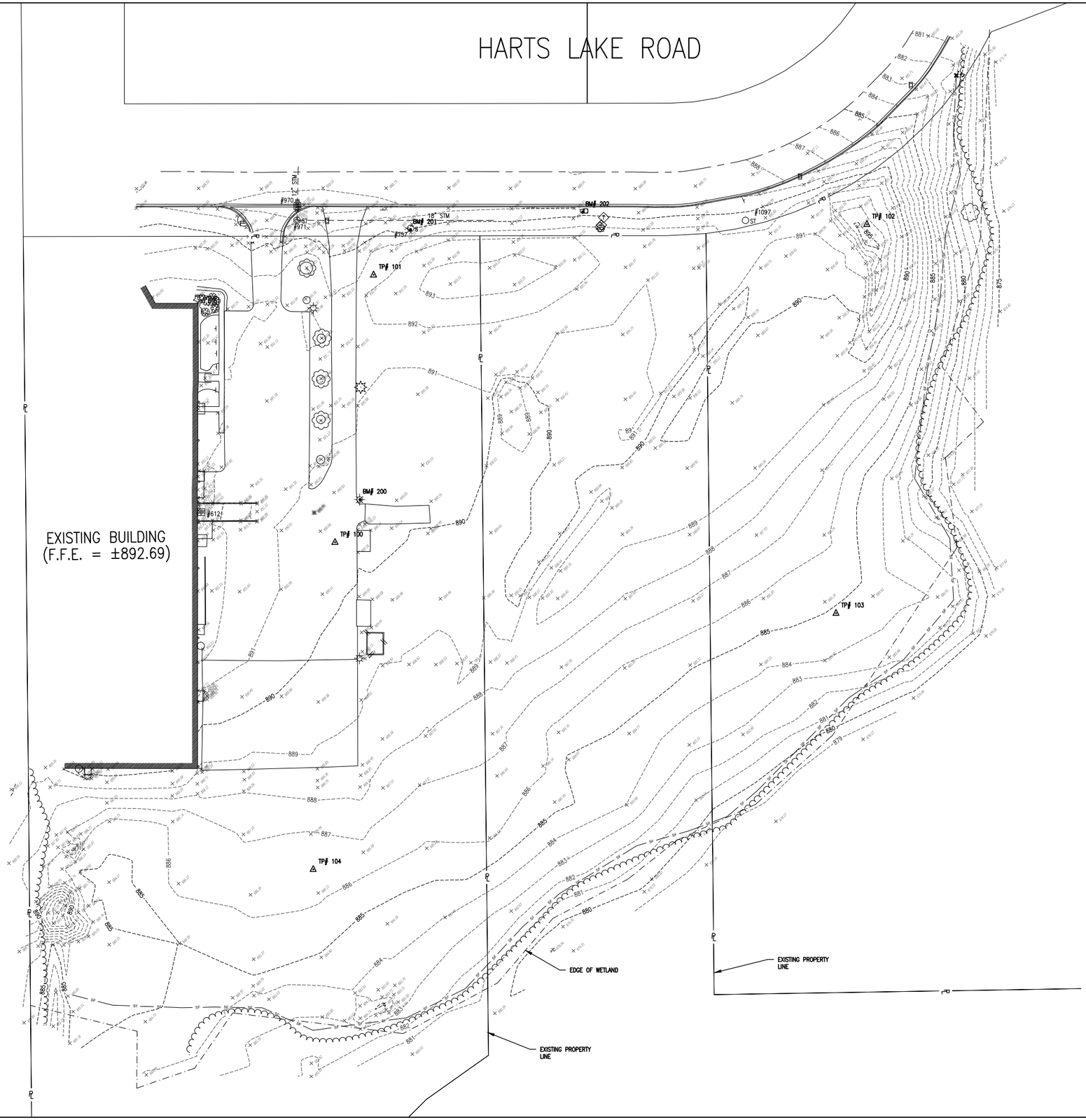

N

GRAPHIC SCALE: 1 inch = 40 feet

0 20 40 80 120

EXISTING STRUCTURE INVENTORIES

SANITARY STRUCTURES

#757 SANITARY MANHOLE T/CAST 890.79
8" PVC INV N 874.59
6" PVC INV NW 882.87
6" PVC INV SW 882.97
UNSURE OF PIPE OUTLET TYPE

STORM STRUCTURES

#612 SQUARE CATCH BASIN T/CAST 888.94
INV 888.23

#970 SQUARE CATCH BASIN T/CAST 887.54
12" CONC INV N 882.93
12" CONC INV S 882.86

#971 STORM MANHOLE T/CAST 889.24
18" CONC INV E 882.65
12" CONC INV N 882.65

#1097 STORM MANHOLE T/CAST 890.56
12" CONC INV NE 880.86
18" CONC INV W 881.02

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05/31/18 | 0053-18-0010 | Value | Value | Value | Value | Value

CITY OF BATTLE CREEK
BUCKNER DR
NEXTHERMAL - EXISTING CONDITIONS PLAN

SHEET NS-111

DRAWING PATH: P:\1000_1999\1053\18\0010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180105BUR_SITE_NEXTH.dwg Jul 09, 2018 - 4:59pm

JOB BENCHMARK #200 TOP OF SE BOLT OF LT POLE W/ CONC BASE OFF E EDGE OF PARKING LOT, N OF DUMPSTER PAD ELEV 892.35
JOB BENCHMARK #201 MARKED "X" ON S RIM OF SAN MH E OF EASTERN ASPH ENTRANCE TO NEXTHERMAL ELEV 890.82
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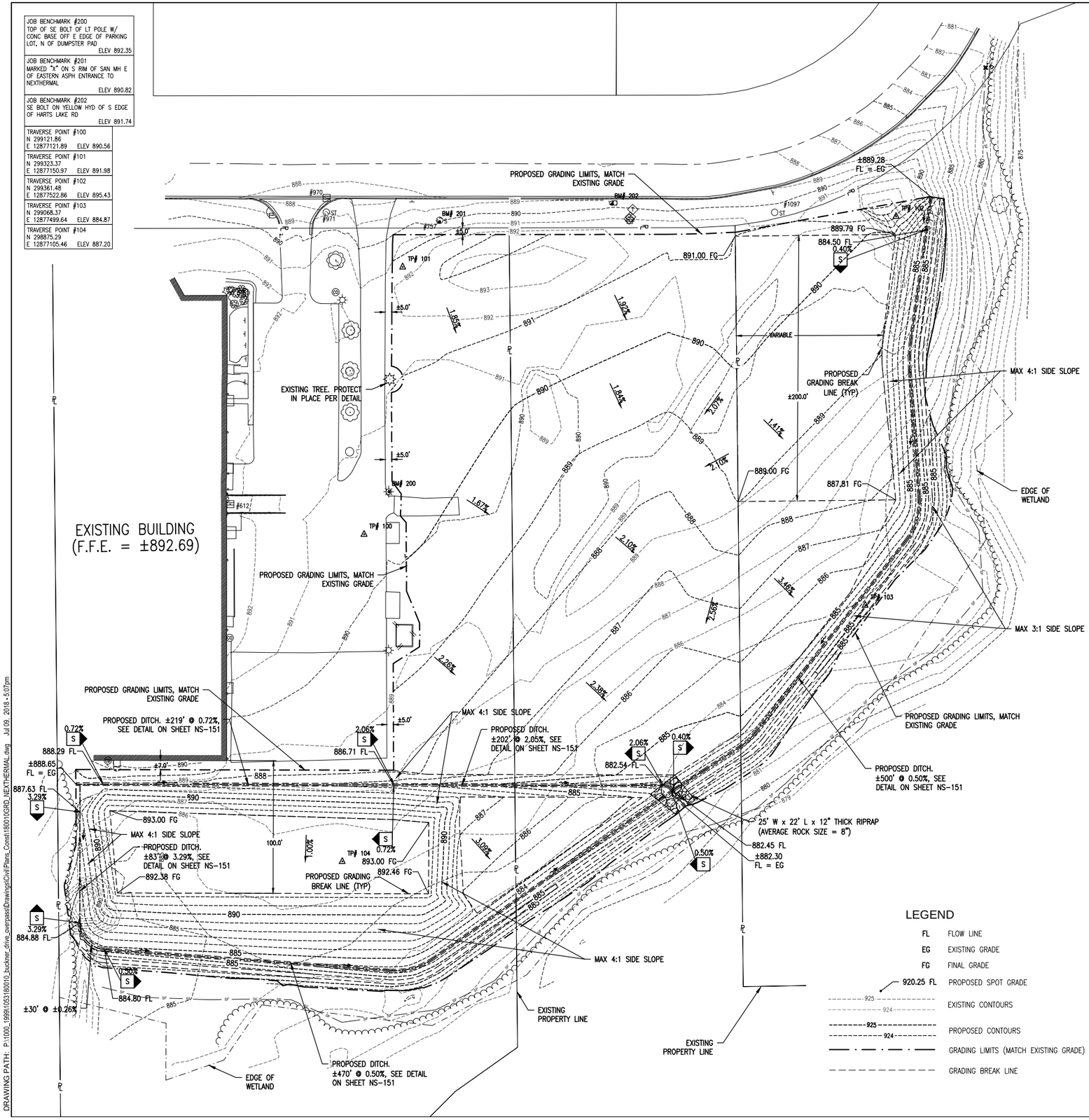

SHEET NOTES

COMPACTION / SOIL TESTING

1. FILL AND BACKFILL MATERIALS SHALL BE PLACED UNIFORMLY ON AN ACCEPTABLE SOIL SURFACE AND COMPACTED IN 8–INCH LIFTS UNLESS THAT CONTRACTOR CAN DEMONSTRATE TO THE OWNER'S REPRESENTATIVE THAT ACCEPTABLE COMPACTION CAN BE ACHIEVED IN THICKER LIFTS.
2. COMPACTION EQUIPMENT:
   A. SHEEPSFOOT ROLLER FOR COHESIVE MATERIALS
   B. VIBRATORY FOR GRANULAR MATERIALS (SAND, STONE, AND GRAVEL)
3. WATER CONTENT: PLUS OR MINUS 2% OF THE OPTIMUM (ASTM D 1557).
4. ROLLER: WORK FROM OUTSIDE TO THE CENTER, OVERLAPPING ON SUCCESSIVE TRIPS AT LEAST ONE–HALF THE WIDTH OF THE ROLLER. ALTERNATE TRIPS OF THE ROLLER SHALL BE SLIGHTLY DIFFERENT LENGTHS.
5. SPEED SHALL BE SUCH THAT DISPLACEMENT OF THE AGGREGATE DOES NOT OCCUR. IN ALL PLACES NOT ACCESSIBLE TO THE ROLLERS, THE MIXTURE SHALL BE COMPACTED WITH HAND–OPERATED POWER TAMPERS OR EXCAVATOR MOUNTED VIBRATORY COMPACTOR (I.E. HOE–PACK).
6. COMPACTION SHALL BE MEASURED RELATIVE TO THE MAXIMUM DRY DENSITY PER ASTM D 1557 (MODIFIED PROCTOR METHOD).
7. MINIMUM COMPACTION:
   A. TOPSOIL 85%
   B. GENERAL FILL 95%
   C. BERMS/POND SLOPES 95%
8. FILL AND BACKFILL WITHIN A 1:1 ENVELOPE OF THE EDGE OF PAVEMENT OR BACK OF CURB SHALL BE TREATED AS "UNDER PAVEMENT"
9. TESTING:
   A. TESTING AGENCY: HAS AUTHORITY TO STOP OR REJECT WORK FOR QUALITY ON BEHALF OF THE OWNER
   B. MOISTURE–DENSITY RELATIONSHIP (ASTM D 1557 – MODIFIED PROCTOR): ONE TEST FOR EACH MATERIAL VARIATION AND BORROW SOURCE.
   C. SIEVE ANALYSIS, (ASTM C 136): 1 PER MATERIAL FOR EACH BORROW SOURCE, EACH RECLAIMED ON–SITE MATERIAL, AND FOR EACH VARIATION IN MATERIAL.
   D. IN–PLACE DENSITIES (ASTM D1556 – SAND CONE OR ASTM D6938 – NUCLEAR GAUGE):
      a) GENERAL: 1 PER 500 SQUARE FEET
      b) UTILITY TRENCHES: 1 PER 100 FEET OF PIPE

GRADING AND RESTORATION

1. SUBMIT RESTORATION PROCEDURE, SEEDS, FERTILIZERS, AND/OR PLANTS TO THE ENGINEER FOR APPROVAL PRIOR TO EXECUTING THE WORK.
2. ALL DISTURBED UNPAVED LAWN AREAS ARE TO RECEIVE AT LEAST 3" OF TOPSOIL. THE CONTRACTOR MAY USE SOD, SEED AND MULCH, OR HYDROSEED, UNLESS OTHERWISE NOTED. THESE AREAS SHALL BE WATERED BY THE CONTRACTOR UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
3. TOPSOIL PLACEMENT:
   A. BEFORE SPREADING THE TOPSOIL, ASSURE THAT ALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES ARE IN PLACE AND FUNCTIONING PROPERLY. THESE PRACTICES MUST BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.
   B. GRADING – MAINTAIN GRADES ON THE AREAS TO BE TOPSOILED ACCORDING TO THE APPROVED PLAN AND DO NOT ALTER THEM BY ADDING TOPSOIL.
   C. IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, LOOSEN OR SCARIFY THE SUBGRADE TO A DEPTH OF AT LEAST 4 INCHES.
   D. TOPSOIL SHALL NOT BE SPREAD WHILE IT IS FROZEN OR MUDDY OR WHEN THE SUBSOIL IS FROZEN OR MUDDY.
   E. COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT AVOID EXCESSIVE COMPACTION, AS IT INCREASES RUNOFF AND INHIBITS SEED GERMINATION AND SEEDLING GROWTH.
4. ALL DISTURBED DETENTION AREAS ARE TO BE SEEDED AND MULCHED USING AN APPROVED SEED MIX.
5. ALL PROPOSED SLOPES ARE TO BE GRADED TO 4H:1V OR FLATTER, UNLESS OTHERWISE INDICATED ON SHEETS.
6. SPOT ELEVATIONS SHOWN INDICATE FINISHED PAVEMENT ELEVATIONS UNLESS OTHERWISE NOTED. ELEVATIONS SHOWN AT STRUCTURES ARE TO FINISH GRADE UNLESS OTHERWISE INDICATED.
7. FINISHED GRADING SHALL BE COMPLETED ACCORDING TO THE GRADING PLAN CONTOURS AND SPOT GRADES. THE CONTRACTOR SHALL UNIFORMLY GRADE AREAS WITHIN LIMITS OF GRADING, INCLUDING ADJACENT TRANSITION AREAS. PROVIDE A SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCES, WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS, WHERE ELEVATIONS ARE SHOWN, OR BETWEEN SUCH POINTS, AND EXISTING GRADES. AREAS THAT HAVE BEEN FINISH GRADED SHALL BE PROTECTED FROM SUBSEQUENT CONSTRUCTION OPERATIONS.
8. AFTER THE SITE GRADING IS COMPLETED, IF EXCESS SOIL MATERIAL OR DEMOLITION DEBRIS EXISTS, THE CONTRACTOR SHALL DISPOSE OF ALL EXCESS SOIL AND DEBRIS MATERIAL IN A MANNER ACCEPTABLE TO THE OWNER AND THE REGULATING AGENCIES INVOLVED.
9. DISTURBED AREAS SHALL BE SLOPED AND GRADED TO RESTORE ORIGINAL DRAINAGE PATTERNS, OR PROVIDE POSITIVE DRAINAGE WHERE NEEDED.
10. RESTORATION OF NON–PAVED AREAS SHALL BE WITH SALVAGED OR IMPORTED TOPSOIL AND PLANTED IN ACCORDANCE WITH THE LANDSCAPE PLANS OR SEEDED AND MULCHED. SEEDED SLOPES GREATER THAN 1V:6H SHALL BE STABILIZED WITH SEED AND STAKED MULCH BLANKETS.

N

GRAPHIC SCALE: 1 Inch = 40 feet
0 20 40 80 120

EARTHWORK TABLE

	NEXTHERMAL
EXCAVATION	2,358 CY
STRIPING TOPSOIL**	5,358 CY
EMBANKMENT (COMPACTED VOLUME)	9,118 CY
EMBANKMENT (BANK VOLUME)*	10,486 CY
NET	8,128 CY (FILL)

* IT IS ASSUMED A BANK – COMPACTED CONVERSION FACTOR OF 1.15
** IT ASSUMED 8" DEPTH OF EXISTING TOPSOIL
(FOR CONTRACTOR REFERENCE ONLY)

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	1053-18-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
NEXTHERMAL - SITE LAYOUT & GRADING PLAN

SHEET NS-150

Know what's below. Call before you dig.

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010GRD_NEXTHERMAL.dwg Jul 09, 2018 - 5:07pm

JOB BENCHMARK #200 TOP OF SE BOLT OF LT POLE W/ CONC BASE OFF E EDGE OF PARKING LOT, N OF DUMPSTER PAD ELEV 892.35
JOB BENCHMARK #201 MARKED "X" ON S RIM OF SAN MH E OF EASTERN ASPH ENTRANCE TO NEXTHERMAL ELEV 890.82
JOB BENCHMARK #202 SE BOLT ON YELLOW HYD OF S EDGE OF HARTS LAKE RD ELEV 891.74
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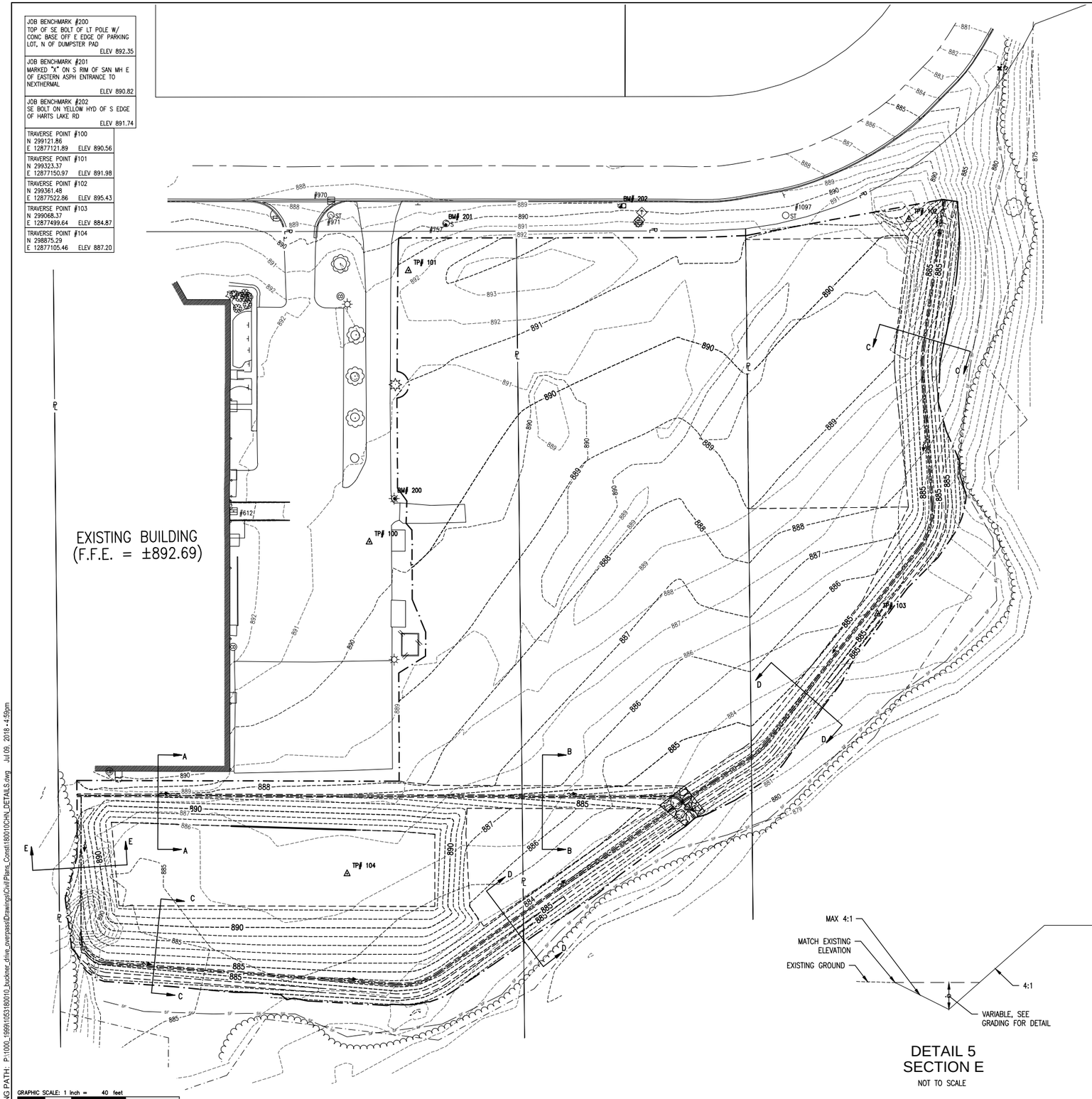
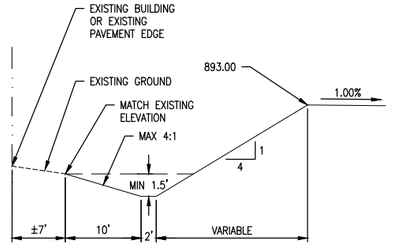
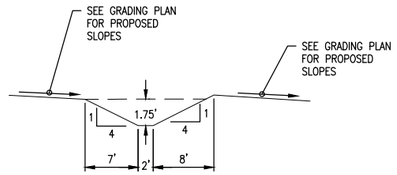
TRAVERSE POINT #104 N 298875.29 E 12877105.46 ELEV 887.20

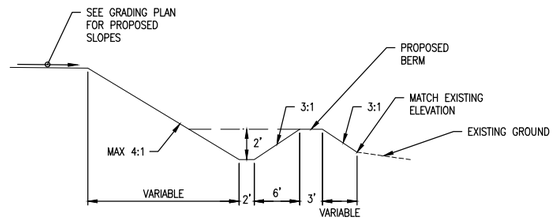




DETAIL 1
SECTION A
NOT TO SCALE

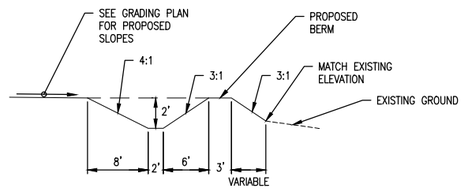


DETAIL 2
SECTION B
NOT TO SCALE



DETAIL 3
SECTION C
NOT TO SCALE

DETAIL 5
SECTION E
NOT TO SCALE



DETAIL 4
SECTION D
NOT TO SCALE

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	1053-14-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
NEXTHERMAL-DITCH TYPICAL SECTIONS

SHEET NS-151

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010CHN_DETAILS.dwg Jul 09, 2018 - 4:59pm

JOB BENCHMARK #200
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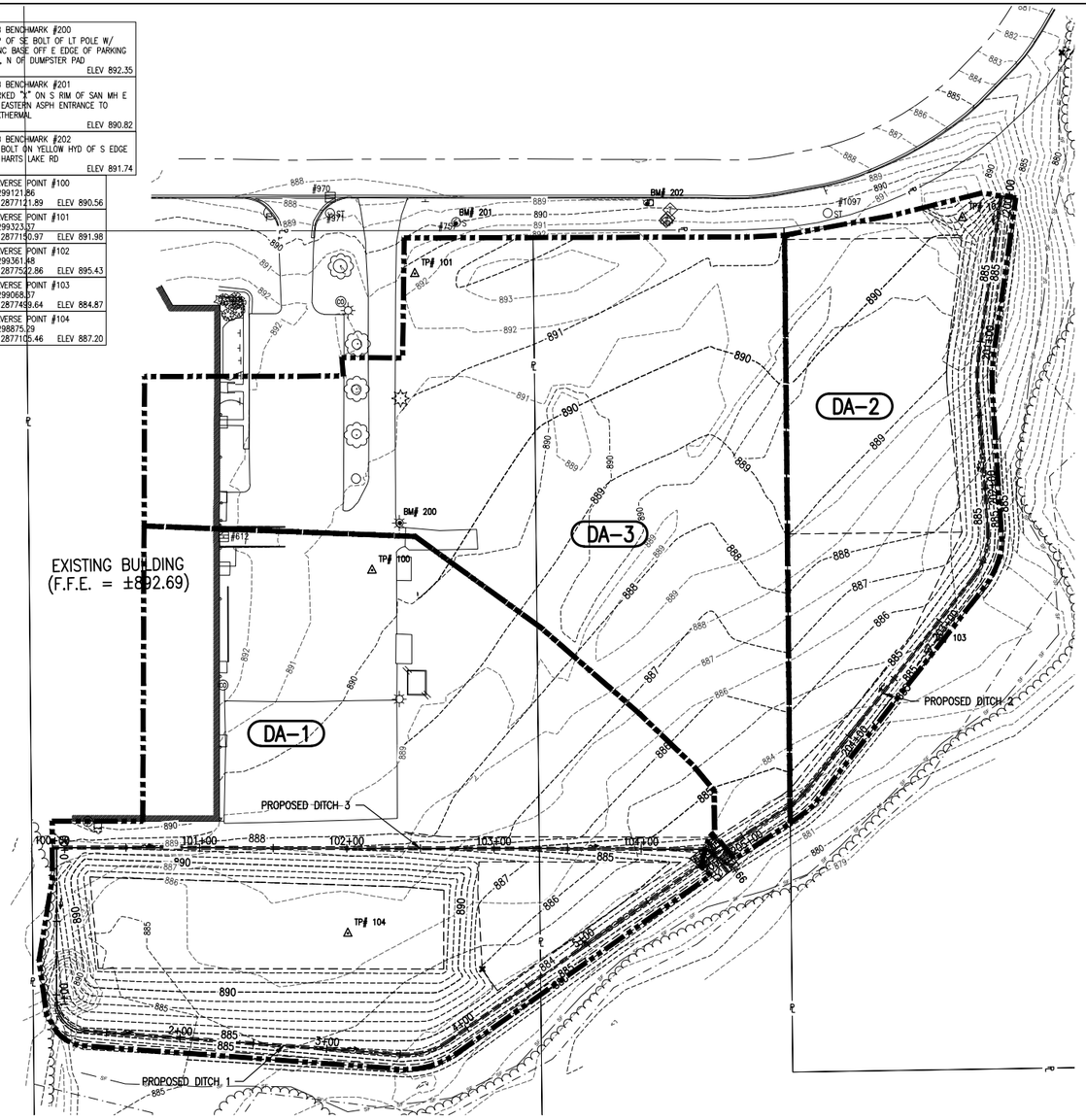

SHEET NOTES

1. DRAINAGE AREAS DA-1, DA-2 AND DA-3 ARE FOR A FINAL DEVELOPMENT STAGE WITH 70% OF TOTAL ASSUMED IMPERVIOUS AREA AND WITH DITCH NUMBER 3 REMOVED.
2. CALCULATIONS SHOWN ON CHART FOR PROPOSED DITCH 1 AND 2 ARE FOR THE FINAL DEVELOPMENT STAGE.
2. CALCULATIONS SHOWN ON CHART FOR PROPOSED DITCH 3 ARE FOR THE DEVELOPMENT STAGE SHOWN ON THE PLAN.
3. EROSION CONTROL BLANKET (MULCH BLANKET) SHALL BE:
- NORTH AMERICAN GREEN BIONET C125BN
- OR EAST COAST EROSION CONTROL ECC-2B BIODEGRADABLE DOUBLE COCONUT
- OR APPROVED EQUAL

N

GRAPHIC SCALE: 1 inch = 50 feet
0 25 50 100 150

POINT TABLE DITCH 1

Point Table			
Raw Description	Elevation	Northing	Easting
0+00	888.596	298933.6366	12876907.7659
2+00	884.473	298804.2185	12876991.3766
0+25	887.504	298908.6366	12876907.7343
0+50	886.679	298883.6367	12876907.7027
0+75	885.855	298858.6367	12876907.6711
1+00	885.031	298833.6367	12876907.6395
1+25	884.824	298811.9634	12876917.1106
1+50	884.723	298807.8940	12876941.5119
1+75	884.598	298806.0563	12876966.4443
2+25	884.348	298802.3808	12877016.3090
2+50	884.223	298800.5430	12877041.2413
2+75	884.098	298798.7053	12877066.1737
3+00	883.973	298796.8675	12877091.1061
3+25	883.848	298795.0298	12877116.0384
3+50	883.723	298793.1921	12877140.9708
3+75	883.590	298797.2604	12877165.3652
4+00	883.473	298810.8459	12877186.3028
4+25	883.348	298825.1963	12877206.7739
4+50	883.223	298839.5466	12877227.2450
4+75	883.098	298853.8970	12877247.7162
5+00	882.973	298868.2473	12877268.1873
5+25	882.848	298882.5977	12877288.6585
5+50	882.723	298896.9480	12877309.1296
5+75	882.598	298911.2984	12877329.6007
6+00	882.473	298925.6488	12877350.0719
6+05	882.451	298928.6776	12877354.3926

POINT TABLE DITCH 2

Point Table			
Raw Description	Elevation	Northing	Easting
200+00	889.280	299376.2135	12877549.2663
202+00	883.733	299177.5352	12877538.2704
200+25	884.495	299351.4591	12877545.7702
200+50	884.332	299326.7048	12877542.2742
200+75	884.232	299301.9505	12877538.7781
201+00	884.132	299277.1961	12877535.2821
201+25	884.033	299252.3395	12877532.9152
201+50	883.933	299227.3973	12877534.5596
201+75	883.833	299202.4662	12877536.4150
202+25	883.633	299152.6041	12877540.1258
202+50	883.531	299128.1036	12877536.6914
202+75	883.430	299107.4476	12877522.7852
203+00	883.330	299087.7805	12877507.3514
203+25	883.230	299068.1133	12877491.9175
203+50	883.130	299048.4462	12877476.4837
203+75	883.030	299028.7791	12877461.0498
204+00	882.930	299009.1119	12877445.6160
204+25	882.830	298989.4448	12877430.1821
204+50	882.730	298969.8543	12877414.6551
204+75	882.629	298954.8982	12877394.7336
205+00	882.529	298941.2811	12877373.7676
205+23	882.451	298928.6776	12877354.3926

POINT TABLE DITCH 3

Point Table			
Raw Description	Elevation	Northing	Easting
100+00	888.596	298933.6366	12876907.7659
102+00	886.990	298933.1632	12877104.7631
100+25	888.257	298933.5838	12876929.7636
100+50	888.076	298933.5237	12876954.7635
100+75	887.895	298933.4636	12876979.7634
101+00	887.714	298933.4035	12877004.7633
101+25	887.533	298933.3434	12877029.7633
101+50	887.352	298933.2834	12877054.7632
101+75	887.171	298933.2233	12877079.7631
102+25	886.809	298933.1031	12877129.7630
102+50	886.486	298933.0431	12877154.7629
102+75	885.971	298932.9830	12877179.7628
103+00	885.456	298932.9229	12877204.7628
103+25	884.942	298932.8628	12877229.7627
103+50	884.427	298932.8028	12877254.7626
103+75	883.912	298932.7427	12877279.7626
104+00	883.398	298932.6826	12877304.7625
104+25	882.883	298932.6225	12877329.7624
104+50	882.462	298929.5278	12877353.7620
104+66	882.298	298916.5973	12877363.8405

PROPOSED STORM CHANNEL CALCULATIONS – 10-YEAR STORM

SECTION	SECTION TYPE	LINING TYPE	BOTTOM WIDTH (FT)	SIDE SLOPES (Z:1)/(Z:1)*	TOTAL DEPTH (FT)	SLOPE (%)	"n"	INCREASE AREA (ACRES)	DRAINAGE AREA TOTAL (ACRES)	"C"	TC (min)	RAIN i (IN/H)	TOTAL FLOW (CFS)	FLOW CAPACITY (CFS)***	WATER DEPTH (FT)	VELOCITY (FTS)	WET AREA (SFT)	WET PERIMETER (FT)	FREEBOARD (FT)	CHANNEL SHEAR STRESS (LB/SFT)	LINING ALLOWABLE STRESS (LB/SFT)
DITCH 1	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 4:1)/(3:1)	2.00'	0.50	0.035	2.77	2.77	0.725**	15	3.72	7.47	11.64	0.82	1.87	3.99	7.97	1.17	0.26	2.00****
DITCH 2 ST 200+00 – 204+63	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 4:1)/(3:1)	2.00'	0.40	0.035	1.10	1.10	0.725**	15	3.72	2.97	10.41	0.56	1.34	2.22	6.08	1.44	0.14	2.00****
DITCH 2 ST 204+63 – 205+23	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 4:1)/(3:1)	2.00'	0.40	0.035	2.26	3.36	0.725**	15	3.72	9.06	10.41	0.94	1.82	4.97	8.85	1.06	0.23	2.00****
DITCH 3 ST 100+00 – 102+35	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 4:1)/(MAX 4:1)	1.50'	0.72	0.035	0.45	0.45	0.60	15	3.72	1.00	3.42	0.27	1.20	0.83	4.23	1.23	0.12	2.00****
DITCH 3 ST 102+35 – 104+50	TRAPEZOIDAL	EROSION CONTROL BLANKET (TYPE 2A)*	2	VARIABLE (MAX 4:1)/(MAX 4:1)	1.75'	2.05	0.035	1.29	1.74	0.55	15	3.72	3.56	13.64	0.4	2.47	1.44	5.30	1.35	0.51	2.00****

* PER MICHIGAN NPS ROLLED EROSION CONTROL PRODUCTS, TABLE 1.
** "C" ASSUMED 70% OF IMPERVIOUS AREA AREA. SEE NOTES.
*** FLOW CAPACITY FOR A 1 FT FREEBOARD.
**** SHEAR STRESS UNVEGETATED ROLLED EROSION CONTROL PRODUCT CAN SUSTAIN WITHOUT PHYSICAL DAMAGE OR EXCESSIVE EROSION (>12.7 MM (0.5 IN) SOIL LOSS) DURING A 30-MINUTE FLOW EVENT, BASED ON HISTORICAL EXPERIENCE AND LARGE-SCALE TESTING OF PRODUCTS WITH MANNING'S ROUGHNESS COEFFECIENTS OF 0.01–0.05.

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CITY OF BATTLE CREEK
BUCKNER DR

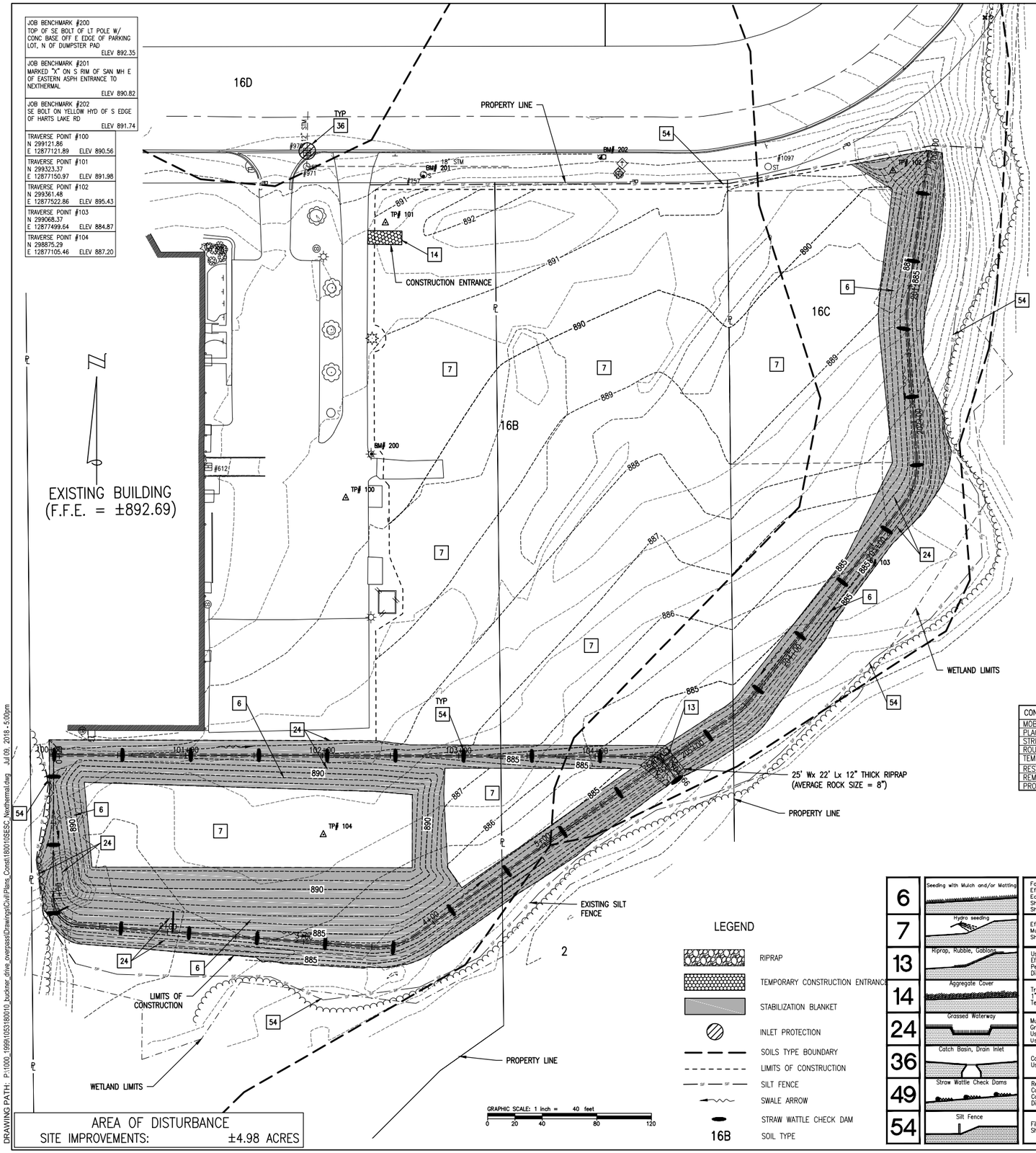
NEXTEHRMEL-SITE STORM WATER DITCH PLAN

SHEET NS-160

Know what's below. Call before you dig.

DRAWING PATH: P:\1000_1999\1053\18010_buckner_drive_overpass\Drawings\Civil Plans_Const\18001OCHN_NEXTHERMAL.dwg Jul 09, 2018 - 5:00pm

JOB BENCHMARK #200 TOP OF SE BOLT OF LT POLE W/ CONC BASE OFF E EDGE OF PARKING LOT, N OF DUMPSTER PAD ELEV 892.35
JOB BENCHMARK #201 MARKED "X" ON S RIM OF SAN MH E OF EASTERN ASPH ENTRANCE TO NEXTHERMAL ELEV 890.82
JOB BENCHMARK #202 SE BOLT ON YELLOW HYD OF S EDGE OF HARTS LAKE RD ELEV 891.74
TRAVERSE POINT #100 N 299121.86 E 12877121.89 ELEV 890.56
TRAVERSE POINT #101 N 299323.37 E 12877150.97 ELEV 891.98
TRAVERSE POINT #102 N 299361.48 E 12877522.86 ELEV 895.43
TRAVERSE POINT #103 N 299068.37 E 12877499.64 ELEV 884.87
TRAVERSE POINT #104 N 298875.29 E 12877105.46 ELEV 887.20



LEGEND

RIPRAP
TEMPORARY CONSTRUCTION ENTRANCE
STABILIZATION BLANKET
INLET PROTECTION
SOILS TYPE BOUNDARY
LIMITS OF CONSTRUCTION
SILT FENCE
SWALE ARROW
STRAW WATTLE CHECK DAM
16B SOIL TYPE

SUPPLEMENTAL SOIL EROSION CONTROL NOTES:

1. ALL EXISTING AND PROPOSED CATCH BASINS SHALL HAVE INLET FILTERS INSTALLED DURING THE DURATION OF CONSTRUCTION.
2. SOILS ONSITE CONSIST OF THE FOLLOWING:
   - 2 HOUGHTON MUCK, UNDRAINED, 0 TO 1 PERCENT SLOPE
   - 16B OSHTEMO SANDY LOAM, 0 TO 6 PERCENT SLOPES
   - 16C OSHTEMO SANDY LOAM, 6 TO 12 PERCENT SLOPES
   - 16D OSHTEMO SANDY LOAM, 12 TO 18 PERCENT SLOPES
3. APPROXIMATE LOCATION OF SOILS ARE SHOWN IN PLAN VIEW.
4. NO FLOODPLAINS ARE ON THE SITE
5. WETLAND AREAS ARE PRESENT ON THE SITE, THE CONTRACTOR SHALL TAKE NECESSARY STEPS TO PROTECT WETLAND AREAS AND KEEP CONSTRUCTION ACTIVITIES OUTSIDE THE WETLAND LIMITS, UNLESS SPECIFICALLY NOTED OTHERWISE AND APPROVED AS PART OF A PERMIT.
6. SWALES AND DITCHES SHALL RECEIVE PERMANENT STABILIZATION (SEED AND MULCH BLANKETS) WITHIN 5 DAYS OF FINAL GRADE.
7. EROSION CONTROL BLANKETS (MULCH BLANKETS) SHALL BE:
   - NORTH AMERICAN GREEN BIONET C125BN
   - OR EAST COAST EROSION CONTROL ECC-2B BIODEGRADABLE DOUBLE COCONUT
   - OR APPROVED EQUAL
8. ROW DITCHES AND GREEN SPACE SHALL BE STABILIZED WITHIN 5 DAYS OF COMPLETING GRADING.
9. RIP-RAP MUST BE INSTALLED WITHIN 24 HOURS OF OUTLET PLACEMENT.
10. RESTORATION OF DISTRBED AREAS NOT REQUIRING SEED AND MULCH BLANKETS SHALL BE RESTORED WITH SEED/MULCH OR HYDROSEED.

Know what's **below.**
Call before you dig.

TASK	FREQUENCY	TRACKING MAT	SILT FENCE	CHECK DAMS	INLET FILTERS	STORM SEWER	CB SUMPS	VEGETATION
INSPECT FOR SEDIMENT ACCUMULATION	WEEKLY	X	X	X	X	X	X	
REMOVE ACCUMULATED SEDIMENT	AS NEEDED		X	X	X	X	X	
INSPECT FOR FLOATABLES AND DEBRIS	WEEKLY			X		X	X	
REMOVE FLOATABLES AND DEBRIS	AS NEEDED			X		X	X	
INSPECT FOR PERMIT CONFORMANCE	AFTER RAIN	X	X		X			
RESTORE TO PERMIT CONFORMANCE	WEEKLY	X	X		X			
INSPECT FOR SOIL EROSION	AFTER RAIN							X
RESTORE TO PREVENT EROSION	AS NEEDED							X
SCRAPE STREET/DRIVES	DAILY							
SWEEP STREET/DRIVES	WEEKLY							

SESC MAINTENANCE SCHEDULE

CONSTRUCTION PHASES	2018 SEP	OCT	NOV	DEC	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
MOBILIZATION	X											
PLACE SESC DEVICES / INSTALL TRACKING PAD	X											
STRIP AND STOCKPILE TOPSOIL	X	X										
ROUGH GRADING / SEDIMENT CONTROL	X	X										
TEMPORARY CONTROL MEASURES	X	X	X	X	X	X	X	X	X	X	X	X
RESTORATION/TURF ESTABLISHMENT		X	X	X	X	X	X	X	X	X	X	X
REMOVE SESC DEVICES												X
PROJECT COMPLETE												X

CONSTRUCTION DATES ARE SUBJECT TO CHANGE.
CONTRACTOR SHALL PROVIDE UPDATED SCHEDULE PRIOR TO CONSTRUCTION.

CONSTRUCTION SEQUENCE

6	Seeding with Mulch and/or Matting	Facilitates establishments of vegetative cover Effective for drainageways with low velocity. Easily placed in small quantities by inexperinced personnel. Shall include prepared topsoil be and straw mulch. Shall use a Mulch Blanket when slopes are 6H:1V or steeper. PERMANENT MEASURE
7	Hydro seeding	Effective on large areas. Mulch tacking agent used to provide immediate protection until grass is rooted. Shall include prepared topsoil bed. PERMANENT MEASURE
13	Riprap, Rubble, Cablorix	Used where vegetation is not easily established. Effective for high velocities or high concentrations. Permits runoff to infiltrate soil. Dissipates energy flow at system outlets. PERMANENT MEASURE
14	Aggregate Cover	Tracking Mat - replenish stone as required due to rutting. 1"-3" crushed concrete 8" thick on geo-fabric. 25' wide by 50' long. Temporary measure, remove after completion of construction. TEMPORARY MEASURE
24	Grassed Waterway	Much more stable form of drainageway than bare channel. Grass tends to slow runoff and filter out sediment. Used where bare channel would be eroded. Use a Turf mulch blanket to reduce erosion and protect seeding. PERMANENT MEASURE
36	Catch Basin, Drain Inlet	Collects high velocity concentrated runoff. Use Inlet Filter Sack as TEMPORARY MEASURE PERMANENT MEASURE
49	Straw Wattle Check Dams	Reduces flow velocity. Catches sediment. Constructed with straw Distance between checks dams ≤ 50 ft. TEMPORARY MEASURE
54	Silt Fence	Filters and detains runoff. Shown on plan as ——— SF ——— TEMPORARY MEASURE

SOILS EROSION, SEDIMENTATION CONTROL (SESC) AND STORMWATER POLLUTION PREVENTION (SWPP) NOTES:

1. LOCAL REGULATOR – CALHOUN ROAD DEPARTMENT (269) 781-9841
2. SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE
   A. NO DEMOLITION, CUTTING, GRADING, EXCAVATION, OR CONSTRUCTION SHALL BE PERFORMED PRIOR TO FULL IMPLEMENTATION OF CONTROL MEASURES.
   B. DESIGN, CONSTRUCT, AND COMPLETE THE EARTH CHANGE IN A MANNER THAT LIMITS THE EXPOSED AREA OF DISTURBED LAND FOR THE SHORTEST PERIOD OF TIME.
   C. REMOVE SEDIMENT CAUSED BY ACCELERATED SOIL EROSION FROM RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH CHANGE.
   D. TEMPORARY OR PERMANENT CONTROL MEASURES SHALL BE INSTALLED TO CONVEY WATER AROUND, THROUGH OR FROM THE EARTH CHANGE AT A NON-EROSIVE VELOCITY.
   E. INSTALL TEMPORARY SOIL AND SEDIMENTATION CONTROL MEASURES BEFORE OR UPON COMMENCEMENT OF THE EARTH CHANGE ACTIVITY AND MAINTAIN THE MEASURES ON A DAILY BASIS. REMOVE TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AFTER PERMANENT SOIL EROSION MEASURES ARE IN PLACE AND THE AREA IS STABILIZED. (STABILIZED MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING OR COVERING OF SOIL TO ENSURE RESISTANCE TO SOIL EROSION, SLIDING OR OTHER EARTH MOVEMENT.)
   F. COMPLETE PERMANENT SOIL EROSION CONTROL MEASURES FOR THE EARTH CHANGE WITHIN FIVE (5) CALENDAR DAYS AFTER FINAL GRADING OR UPON COMPLETION OF FINAL EARTH CHANGE. IF IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE THE EARTH CHANGE, THEN MAINTAIN TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IN PLACE AND STABILIZED.
   G. REMOVE AND DISPOSE OF ALL TEMPORARY CONTROL MEASURES AFTER RESTORATION IS COMPLETE.
3. SOIL EROSION AND SEDIMENTATION CONTROL MAINTENANCE NOTES
   A. INSTALL TEMPORARY INLET FILTERS AT ALL ADJACENT AND DOWN-GRADIENT STORM WATER INLETS, CATCH BASINS AND MANHOLES THAT MAY BE IMPACTED. CATCH BASIN INLET FILTERS SHALL BE MAINTAINED CLEAN AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD. IF A FILTER HAS HOLES OR IS INUNDATED WITH SEDIMENT, THE FILTER SHALL BE REPLACED BY THE CONTRACTOR.
   B. SILT FENCE SHALL BE MAINTAINED AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD. IF REPAIR OR REPLACEMENT IS NECESSARY, IT SHALL BE PERFORMED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS. MAINTENANCE INCLUDES THE REMOVING OF BUILT-UP SEDIMENT ACCUMULATES TO ½ THE HEIGHT OF THE FENCE. CONTRACTOR SHALL REMOVE, REPLACE, RETRENCH, OR RE-BACKFILL THE FENCE IF IT FAILS. ADDITIONALLY, THE CONTRACTOR SHALL REINSTALL ANY PORTION OF THE FENCING DAMAGED BY CONSTRUCTION MACHINERY.
   C. PLACE STOCKPILES AND OTHER SPOIL PILES AWAY FROM THE DRAINAGE SYSTEM TO MINIMIZE SEDIMENT TRANSPORT. IF THE STOCKPILE AND/OR SPOIL PILE MUST REMAIN ON-SITE OVERNIGHT, OR IF THE WEATHER CONDITIONS INDICATE THE CHANCE FOR PRECIPITATION, A) COVER THE PILE WITH WATER REPELLENT MATERIAL TO PREVENT EROSION AND/OR B) INSTALL SILT FENCING AROUND THE BASE OF THE PILE TO PREVENT TRANSPORT OF SEDIMENT TO THE STORM WATER SYSTEM, OR APPLY OTHER CONTROL METHODS APPROPRIATE TO THE SITE. CONTROL MEASURES TO GUARD AGAINST WIND EROSION MUST ALSO BE EMPLOYED, SUCH AS WETTING OR COVERING THE STOCKPILES. KEEP AS FEW STOCKPILES AS POSSIBLE DURING THE COURSE OF THE PROJECT.
   D. DITCHES AND SWALES SHALL HAVE CHECK DAMS INSTALLED AT REGULAR INTERVALS; CULVERT INLETS AND/OR SPILLWAYS SHALL BE PROTECTED WITH STONE BERMS OR STRAW BALES.
   E. THROUGHOUT THE CONSTRUCTION PERIOD, ALL MUD/SILT TRACKED ONTO EXISTING ROADS FROM THE SITE DUE TO CONSTRUCTION SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR.
   F. SEEDING OR OTHER STABILIZATION SHALL BE REQUIRED IMMEDIATELY TO AREAS DAMAGED BY RUNOFF.
   G. DUST CONTROL: PREVENT THE SPREAD OF DUST AND DEBRIS AND AVOID THE CREATION OF A NUISANCE IN THE SURROUNDING AREA. WATER SHALL BE THE ONLY APPROVED DUST CONTROL SUBSTANCE. DO NOT USE WATER IF IT RESULTS IN HAZARDOUS OR OBJECTIONABLE CONDITIONS SUCH AS, BUT NOT LIMITED TO, ICE, FLOODING, OR POLLUTION.
   H. INSPECTIONS BY THE OWNER OR A REGULATOR MAY OCCUR AND RESULT IN DIRECTION FOR MAINTENANCE OR EXPANSION OF INSTALLED MEASURES; CONTRACTOR SHALL COMPLY AT NO ADDITIONAL COST.
4. POLLUTION PREVENTION NOTES
   A. DURING WORK ACTIVITIES IF SUSPECT CONTAMINATED SOIL, GROUNDWATER, OR OTHER UNKNOWN MATERIAL IS ENCOUNTERED CONTACT THE OWNER'S REPRESENTATIVE IMMEDIATELY. SUSPECT CONTAMINATED SOIL MAY EXHIBIT CHEMICAL OR UNUSUAL ODORS, STAINING, UNUSUAL COLORING, AND/OR CONTAIN MAN-MADE DEBRIS. SUSPECT CONTAMINATED GROUNDWATER MAY EXHIBIT CHEMICAL OR UNUSUAL ODORS, UNUSUAL COLORING, AND/OR SHEEN. IMMEDIATELY CEASE ALL EXCAVATION, DEWATERING, TRANSPORT, OR DISTURBANCE OF THE SUSPECT MATERIAL UNTIL GIVEN DIRECTION BY THE OWNER'S REPRESENTATIVE.
   B. DISCHARGING POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE, AND OTHER HARMFUL WASTE INTO OR ALONGSIDE OF RIVERS, STREAMS, IMPOUNDMENTS OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO IS STRICTLY PROHIBITED. ANY SPILLS OR DISCHARGES AS DESCRIBED ABOVE SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY.
   C. CONTRACTOR SHALL NOT DISCHARGE TO THE SURFACE WATERS OF THE STATE ANY WASTEWATER GENERATED FROM CUTTING, GRINDING, DRILLING, OR HYDRODEMOLITION OF CONCRETE, INCLUDING ASPHALT WITHOUT AUTHORIZATION FROM THE OWNER.
   D. THE FOLLOWING REQUIREMENTS APPLY:
      - STORM DRAINS MUST BE PROTECTED FROM DUST AND DEBRIS.
      - ANY WATER USED DURING CONCRETE AND ASPHALT WORK (INCLUDING SWEEPING AND SAW-CUTTING) MUST BE CONTAINED AND COLLECTED FOR PROPER DISPOSAL. SUGGESTED CONTROLS INCLUDE WET VACUUM, OR ABSORBENTS.
      - GOOD HOUSEKEEPING PRACTICES MUST BE EMPLOYED AT THE JOBSITE. MINIMIZE DUST.
5. CONCRETE AND GROUT WASHOUT
   A. DO NOT DISCHARGE CONCRETE/GROUT WASHOUT INTO STORM DRAINS, CATCH BASINS OR TO THE SANITARY SEWER SYSTEM. PERFORM WASHING OF CONCRETE TRUCKS IN DESIGNATED AREAS OR AN APPROVED OFFSITE LOCATION.
   B. DESIGNATED AREAS SHOULD BE CLEARLY LABELED. THEY SHOULD BE IN A PIT TO PREVENT RUN-OFF OF WASTE WATER. PLACE DESIGNATED AREAS A MINIMUM OF 50 FEET FROM STORM DRAINS, BODIES OF WATER AND DITCHES. ALL DESIGNATED AREAS SHOULD BE LINED TO PREVENT SEEPAGE AND SHOULD HAVE A BARRIER.
   C. ALTERNATIVE TO A DESIGNATED AREA: PROVIDE A CONCRETE BOX. IF ONLY A SMALL OF CONCRETE WASHINGS IS TO OCCUR, ONE OPTION IS TO LINE A ROLL-OFF BOX. FOR VERY SMALL PROJECTS THIS COULD BE DONE WITH A DRUM.
   D. ONCE CONCRETE WASHOUT HAS HARDENED, BREAK UP AND DISPOSE OF PROPERLY. DISPOSAL OF HARDENED CONCRETE/GROUT SHOULD OCCUR ON A REGULAR BASIS.
   E. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES PROVIDED ONCE THE WASHOUT AREA IS 75% FULL.
6. DEWATERING: UNCONTAMINATED GROUNDWATER AND SURFACE WATER WHICH IS FREE OF SEDIMENT MAY BE DISCHARGED TO A STORM DRAIN. ALL DEWATERING OPERATIONS MUST USE A FILTER (DEWATERING) BAG CONNECTED TO THE END OF THE DISCHARGE PIPE. THE FINAL DISCHARGE MUST BE CLEAR (NO TURBIDITY) AND ON A CLEAN SURFACE (NOT ON EXPOSED SOILS) TO PREVENT THE DISCHARGE FROM PICKING UP SEDIMENT. THE STORM DRAIN INLET SHALL BE PROTECTED WITH AN INLET FILTER. THE CONTRACTOR SHALL ENSURE ROUTINE INSPECTION AND MAINTENANCE OF THE PUMP HOSES & FILTER BAGS DAILY, REPLACE EQUIPMENT WHEN SIGNS OF DETERIORATION ARE EVIDENT AND/OR IF INSTRUCTED BY THE CONSTRUCTION SITE STORM OPERATOR OR OWNER'S REPRESENTATIVE. IF THERE ARE INDICATIONS OF POSSIBLE CONTAMINATION, OR IF THE WATER IS TURBID, IMMEDIATELY CEASE DISCHARGE.

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CITY OF BATTLE CREEK
BUCKNER DR
NEXTHERMAL - SESC PLAN

SHEET NS-170

DRAWING PATH: P:\1000_1999\1053\180010_buckner_drive_overpass\Drawings\Civil\Plans_Const\180010SESC_Nexthermal.dwg Jul 09, 2018 - 5:00pm

N

GRAPHIC SCALE: 1 inch = 100 feet

0 50 100 200 300

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CITY OF BATTLE CREEK
BUCKNER DR

COLUMBIA - EXISTING CONDITIONS PLAN

SHEET CS-110

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SHEET NOTES

COMPACTION / SOIL TESTING

1. FILL AND BACKFILL MATERIALS SHALL BE PLACED UNIFORMLY ON AN ACCEPTABLE SOIL SURFACE AND COMPACTED IN 8-INCH LIFTS UNLESS THAT CONTRACTOR CAN DEMONSTRATE TO THE OWNER'S REPRESENTATIVE THAT ACCEPTABLE COMPACTION CAN BE ACHIEVED IN THICKER LIFTS.
2. COMPACTION EQUIPMENT:
   - A. SHEEPSFOOT ROLLER FOR COHESIVE MATERIALS
   - B. VIBRATORY FOR GRANULAR MATERIALS (SAND, STONE, AND GRAVEL)
3. WATER CONTENT: PLUS OR MINUS 2% OF THE OPTIMUM (ASTM D 1557).
4. ROLLER: WORK FROM OUTSIDE TO THE CENTER, OVERLAPPING ON SUCCESSIVE TRIPS AT LEAST ONE-HALF THE WIDTH OF THE ROLLER. ALTERNATE TRIPS OF THE ROLLER SHALL BE SLIGHTLY DIFFERENT LENGTHS.
5. SPEED SHALL BE SUCH THAT DISPLACEMENT OF THE AGGREGATE DOES NOT OCCUR. IN ALL PLACES NOT ACCESSIBLE TO THE ROLLERS, THE MIXTURE SHALL BE COMPACTED WITH HAND-OPERATED POWER TAMPERS OR EXCAVATOR MOUNTED VIBRATORY COMPACTOR (I.E. HOE-PACK).
6. COMPACTION SHALL BE MEASURED RELATIVE TO THE MAXIMUM DRY DENSITY PER ASTM D 1557 (MODIFIED PROCTOR METHOD).
7. MINIMUM COMPACTION:
   - A. TOPSOIL 85%
   - B. GENERAL FILL 95%
   - C. BERMS/POND SLOPES 95%
8. FILL AND BACKFILL WITHIN A 1:1 ENVELOPE OF THE EDGE OF PAVEMENT OR BACK OF CURB SHALL BE TREATED AS "UNDER PAVEMENT"
9. TESTING:
   - A. TESTING AGENCY: HAS AUTHORITY TO STOP OR REJECT WORK FOR QUALITY ON BEHALF OF THE OWNER
   - B. MOISTURE-DENSITY RELATIONSHIP (ASTM D 1557 – MODIFIED PROCTOR): ONE TEST FOR EACH MATERIAL VARIATION AND BORROW SOURCE.
   - C. SIEVE ANALYSIS, (ASTM C 136): 1 PER MATERIAL FOR EACH BORROW SOURCE, EACH RECLAIMED ON-SITE MATERIAL, AND FOR EACH VARIATION IN MATERIAL.
   - D. IN-PLACE DENSITIES (ASTM D1556 – SAND CONE OR ASTM D6938 – NUCLEAR GAUGE):
     - a) GENERAL: 1 PER 500 SQUARE FEET
     - b) UTILITY TRENCHES: 1 PER 100 FEET OF PIPE

GRADING AND RESTORATION

1. SUBMIT RESTORATION PROCEDURE, SEEDS, FERTILIZERS, AND/OR PLANTS TO THE ENGINEER FOR APPROVAL PRIOR TO EXECUTING THE WORK.
2. ALL DISTURBED UNPAVED LAWN AREAS ARE TO RECEIVE AT LEAST 3" OF TOPSOIL, THE CONTRACTOR MAY USE SOD, SEED AND MULCH, OR HYDROSEED, UNLESS OTHERWISE NOTED. THESE AREAS SHALL BE WATERED BY THE CONTRACTOR UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
3. TOPSOIL PLACEMENT:
   - A. BEFORE SPREADING THE TOPSOIL, ASSURE THAT ALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES ARE IN PLACE AND FUNCTIONING PROPERLY. THESE PRACTICES MUST BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.
   - B. GRADING – MAINTAIN GRADES ON THE AREAS TO BE TOPSOILED ACCORDING TO THE APPROVED PLAN AND DO NOT ALTER THEM BY ADDING TOPSOIL.
   - C. IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, LOOSEN OR SCARIFY THE SUBGRADE TO A DEPTH OF AT LEAST 4 INCHES.
   - D. TOPSOIL SHALL NOT BE SPREAD WHILE IT IS FROZEN OR MUDDY OR WHEN THE SUBSOIL IS FROZEN OR MUDDY.
   - E. COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT AVOID EXCESSIVE COMPACTION, AS IT INCREASES RUNOFF AND INHIBITS SEED GERMINATION AND SEEDLING GROWTH.
4. ALL DISTURBED DETENTION AREAS ARE TO BE SEEDED AND MULCHED USING AN APPROVED SEED MIX.
5. ALL PROPOSED SLOPES ARE TO BE GRADED TO 4H:1V OR FLATTER, UNLESS OTHERWISE INDICATED ON SHEETS.
6. SPOT ELEVATIONS SHOWN INDICATE FINISHED PAVEMENT ELEVATIONS UNLESS OTHERWISE NOTED. ELEVATIONS SHOWN AT STRUCTURES ARE TO FINISH GRADE UNLESS OTHERWISE INDICATED.
7. FINISHED GRADING SHALL BE COMPLETED ACCORDING TO THE GRADING PLAN CONTOURS AND SPOT GRADES. THE CONTRACTOR SHALL UNIFORMLY GRADE AREAS WITHIN LIMITS OF GRADING, INCLUDING ADJACENT TRANSITION AREAS. PROVIDE A SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCES, WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS, WHERE ELEVATIONS ARE SHOWN, OR BETWEEN SUCH POINTS, AND EXISTING GRADES. AREAS THAT HAVE BEEN FINISH GRADED SHALL BE PROTECTED FROM SUBSEQUENT CONSTRUCTION OPERATIONS.
8. AFTER THE SITE GRADING IS COMPLETED, IF EXCESS SOIL MATERIAL OR DEMOLITION DEBRIS EXISTS, THE CONTRACTOR SHALL DISPOSE OF ALL EXCESS SOIL AND DEBRIS MATERIAL IN A MANNER ACCEPTABLE TO THE OWNER AND THE REGULATING AGENCIES INVOLVED.
9. DISTURBED AREAS SHALL BE SLOPED AND GRADED TO RESTORE ORIGINAL DRAINAGE PATTERNS, OR PROVIDE POSITIVE DRAINAGE WHERE NEEDED.
10. RESTORATION OF NON-PAVED AREAS SHALL BE WITH SALVAGED OR IMPORTED TOPSOIL AND PLANTED IN ACCORDANCE WITH THE LANDSCAPE PLANS OR SEEDED AND MULCHED. SEEDED SLOPES GREATER THAN 1V:6H SHALL BE STABILIZED WITH SEED AND STAKED MULCH BLANKETS.

LEGEND

- 925 / 924 EXISTING CONTOURS
- 925 / 924 PROPOSED CONTOURS

N

GRAPHIC SCALE: 1 inch = 100 feet

0 50 100 200 300

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REVISIONS

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	MUNICIPALITY
	1053-15-0010	Value	Value	Value	Value	Value

CITY OF BATTLE CREEK
BUCKNER DR
COLUMBIA - GRADING PLAN

SHEET CS-150

DRAWING PATH: P:\1000_1999\1053\80010_buckner_drive_overpass\Drawings\Civil\Plans_Const\80010GRD_COLUMBIA.dwg Jul 09, 2018 - 5:01pm

SOILS EROSION, SEDIMENTATION CONTROL (SESC) AND STORMWATER POLLUTION PREVENTION (SWPP) NOTES:

1. LOCAL REGULATOR – CALHOUN ROAD DEPARTMENT (269) 781-9841
2. SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE
   A. NO DEMOLITION, CUTTING, GRADING, EXCAVATION, OR CONSTRUCTION SHALL BE PERFORMED PRIOR TO FULL IMPLEMENTATION OF CONTROL MEASURES.
   B. DESIGN, CONSTRUCT, AND COMPLETE THE EARTH CHANGE IN A MANNER THAT LIMITS THE EXPOSED AREA OF DISTURBED LAND FOR THE SHORTEST PERIOD OF TIME.
   C. REMOVE SEDIMENT CAUSED BY ACCELERATED SOIL EROSION FROM RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH CHANGE.
   D. TEMPORARY OR PERMANENT CONTROL MEASURES SHALL BE INSTALLED TO CONVEY WATER AROUND, THROUGH OR FROM THE EARTH CHANGE AT A NON-EROSIVE VELOCITY.
   E. INSTALL TEMPORARY SOIL AND SEDIMENTATION CONTROL MEASURES BEFORE OR UPON COMMENCEMENT OF THE EARTH CHANGE ACTIVITY AND MAINTAIN THE MEASURES ON A DAILY BASIS. REMOVE TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AFTER PERMANENT SOIL EROSION MEASURES ARE IN PLACE AND THE AREA IS STABILIZED. (STABILIZED MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING OR COVERING OF SOIL TO ENSURE RESISTANCE TO SOIL EROSION, SLIDING OR OTHER EARTH MOVEMENT.)
   F. COMPLETE PERMANENT SOIL EROSION CONTROL MEASURES FOR THE EARTH CHANGE WITHIN FIVE (5) CALENDAR DAYS AFTER FINAL GRADING OR UPON COMPLETION OF FINAL EARTH CHANGE. IF IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE THE EARTH CHANGE, THEN MAINTAIN TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IN PLACE AND STABILIZED.
   G. REMOVE AND DISPOSE OF ALL TEMPORARY CONTROL MEASURES AFTER RESTORATION IS COMPLETE.
3. SOIL EROSION AND SEDIMENTATION CONTROL MAINTENANCE NOTES
   A. INSTALL TEMPORARY INLET FILTERS AT ALL ADJACENT AND DOWN-GRADIENT STORM WATER INLETS, CATCH BASINS AND MANHOLES THAT MAY BE IMPACTED. CATCH BASIN INLET FILTERS SHALL BE MAINTAINED CLEAN AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD. IF A FILTER HAS HOLES OR IS INUNDATED WITH SEDIMENT, THE FILTER SHALL BE REPLACED BY THE CONTRACTOR.
   B. SILT FENCE SHALL BE MAINTAINED AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD. IF REPAIR OR REPLACEMENT IS NECESSARY, IT SHALL BE PERFORMED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS. MAINTENANCE INCLUDES THE REMOVING OF BUILT-UP SEDIMENT ACCUMULATES TO ½ THE HEIGHT OF THE FENCE. CONTRACTOR SHALL REMOVE, REPLACE, RETRENCH, OR RE-BACKFILL THE FENCE IF IT FAILS. ADDITIONALLY, THE CONTRACTOR SHALL REINSTALL ANY PORTION OF THE FENCING DAMAGED BY CONSTRUCTION MACHINERY.
   C. PLACE STOCKPILES AND OTHER SPOIL PILES AWAY FROM THE DRAINAGE SYSTEM TO MINIMIZE SEDIMENT TRANSPORT. IF THE STOCKPILE AND/OR SPOIL PILE MUST REMAIN ON-SITE OVERNIGHT, OR IF THE WEATHER CONDITIONS INDICATE THE CHANCE FOR PRECIPITATION, A) COVER THE PILE WITH WATER REPELLENT MATERIAL TO PREVENT EROSION AND/OR B) INSTALL SILT FENCING AROUND THE BASE OF THE PILE TO PREVENT TRANSPORT OF SEDIMENT TO THE STORM WATER SYSTEM, OR APPLY OTHER CONTROL METHODS APPROPRIATE TO THE SITE. CONTROL MEASURES TO GUARD AGAINST WIND EROSION MUST ALSO BE EMPLOYED, SUCH AS WETTING OR COVERING THE STOCKPILES. KEEP AS FEW STOCKPILES AS POSSIBLE DURING THE COURSE OF THE PROJECT.
   D. DITCHES AND SWALES SHALL HAVE CHECK DAMS INSTALLED AT REGULAR INTERVALS; CULVERT INLETS AND/OR SPILLWAYS SHALL BE PROTECTED WITH STONE BERMS OR STRAW BALES.
   E. THROUGHOUT THE CONSTRUCTION PERIOD, ALL MUD/SILT TRACKED ONTO EXISTING ROADS FROM THE SITE DUE TO CONSTRUCTION SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR.
   F. SEEDING OR OTHER STABILIZATION SHALL BE REQUIRED IMMEDIATELY TO AREAS DAMAGED BY RUNOFF.
   G. DUST CONTROL: PREVENT THE SPREAD OF DUST AND DEBRIS AND AVOID THE CREATION OF A NUISANCE IN THE SURROUNDING AREA. WATER SHALL BE THE ONLY APPROVED DUST CONTROL SUBSTANCE. DO NOT USE WATER IF IT RESULTS IN HAZARDOUS OR OBJECTIONABLE CONDITIONS SUCH AS, BUT NOT LIMITED TO, ICE, FLOODING, OR POLLUTION.
   H. INSPECTIONS BY THE OWNER OR A REGULATOR MAY OCCUR AND RESULT IN DIRECTION FOR MAINTENANCE OR EXPANSION OF INSTALLED MEASURES; CONTRACTOR SHALL COMPLY AT NO ADDITIONAL COST.
4. POLLUTION PREVENTION NOTES
   A. DURING WORK ACTIVITIES IF SUSPECT CONTAMINATED SOIL, GROUNDWATER, OR OTHER UNKNOWN MATERIAL IS ENCOUNTERED CONTACT THE OWNER'S REPRESENTATIVE IMMEDIATELY. SUSPECT CONTAMINATED SOIL MAY EXHIBIT CHEMICAL OR UNUSUAL ODORS, STAINING, UNUSUAL COLORING, AND/OR CONTAIN MAN-MADE DEBRIS. SUSPECT CONTAMINATED GROUNDWATER MAY EXHIBIT CHEMICAL OR UNUSUAL ODORS, UNUSUAL COLORING, AND/OR SHEEN. IMMEDIATELY CEASE ALL EXCAVATION, DEWATERING, TRANSPORT, OR DISTURBANCE OF THE SUSPECT MATERIAL UNTIL GIVEN DIRECTION BY THE OWNER'S REPRESENTATIVE.
   B. DISCHARGING POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE, AND OTHER HARMFUL WASTE INTO OR ALONGSIDE OF RIVERS, STREAMS, IMPOUNDMENTS OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO IS STRICTLY PROHIBITED. ANY SPILLS OR DISCHARGES AS DESCRIBED ABOVE SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY.
   C. CONTRACTOR SHALL NOT DISCHARGE TO THE SURFACE WATERS OF THE STATE ANY WASTEWATER GENERATED FROM CUTTING, GRINDING, DRILLING, OR HYDRODEMOLITION OF CONCRETE, INCLUDING ASPHALT WITHOUT AUTHORIZATION FROM THE OWNER.
   D. THE FOLLOWING REQUIREMENTS APPLY:
      - STORM DRAINS MUST BE PROTECTED FROM DUST AND DEBRIS.
      - ANY WATER USED DURING CONCRETE AND ASPHALT WORK (INCLUDING SWEEPING AND SAW-CUTTING) MUST BE CONTAINED AND COLLECTED FOR PROPER DISPOSAL. SUGGESTED CONTROLS INCLUDE WET VACUUM, OR ABSORBENTS.
      - GOOD HOUSEKEEPING PRACTICES MUST BE EMPLOYED AT THE JOBSITE. MINIMIZE DUST.
5. CONCRETE AND GROUT WASHOUT
   A. DO NOT DISCHARGE CONCRETE/GROUT WASHOUT INTO STORM DRAINS, CATCH BASINS OR TO THE SANITARY SEWER SYSTEM. PERFORM WASHING OF CONCRETE TRUCKS IN DESIGNATED AREAS OR AN APPROVED OFFSITE LOCATION.
   B. DESIGNATED AREAS SHOULD BE CLEARLY LABELED. THEY SHOULD BE IN A PIT TO PREVENT RUN-OFF OF WASTE WATER. PLACE DESIGNATED AREAS A MINIMUM OF 50 FEET FROM STORM DRAINS, BODIES OF WATER AND DITCHES. ALL DESIGNATED AREAS SHOULD BE LINED TO PREVENT SEEPAGE AND SHOULD HAVE A BARRIER.
   C. ALTERNATIVE TO A DESIGNATED AREA: PROVIDE A CONCRETE BOX. IF ONLY A SMALL OF CONCRETE WASHINGS IS TO OCCUR, ONE OPTION IS TO LINE A ROLL-OFF BOX. FOR VERY SMALL PROJECTS THIS COULD BE DONE WITH A DRUM.
   D. ONCE CONCRETE WASHOUT HAS HARDENED, BREAK UP AND DISPOSE OF PROPERLY. DISPOSAL OF HARDENED CONCRETE/GROUT SHOULD OCCUR ON A REGULAR BASIS.
   E. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES PROVIDED ONCE THE WASHOUT AREA IS 75% FULL.
6. DEWATERING: UNCONTAMINATED GROUNDWATER AND SURFACE WATER WHICH IS FREE OF SEDIMENT MAY BE DISCHARGED TO A STORM DRAIN. ALL DEWATERING OPERATIONS MUST USE A FILTER (DEWATERING) BAG CONNECTED TO THE END OF THE DISCHARGE PIPE. THE FINAL DISCHARGE MUST BE CLEAR (NO TURBIDITY) AND ON A CLEAN SURFACE (NOT ON EXPOSED SOILS) TO PREVENT THE DISCHARGE FROM PICKING UP SEDIMENT. THE STORM DRAIN INLET SHALL BE PROTECTED WITH AN INLET FILTER. THE CONTRACTOR SHALL ENSURE ROUTINE INSPECTION AND MAINTENANCE OF THE PUMP HOSES & FILTER BAGS DAILY, REPLACE EQUIPMENT WHEN SIGNS OF DETERIORATION ARE EVIDENT AND/OR IF INSTRUCTED BY THE CONSTRUCTION SITE STORM OPERATOR OR OWNER'S REPRESENTATIVE. IF THERE ARE INDICATIONS OF POSSIBLE CONTAMINATION, OR IF THE WATER IS TURBID, IMMEDIATELY CEASE DISCHARGE.

TASK	FREQUENCY	TRACKING MAT	SILT FENCE	CHECK DAMS	INLET FILTERS	STORM SEWER	CB SUMPS	VEGETATION
INSPECT FOR SEDIMENT ACCUMULATION	WEEKLY	X	X	X	X	X	X	
REMOVE ACCUMULATED SEDIMENT	AS NEEDED		X	X	X	X	X	
INSPECT FOR FLOATABLES AND DEBRIS	WEEKLY			X		X	X	
REMOVE FLOATABLES AND DEBRIS	AS NEEDED			X		X	X	
INSPECT FOR PERMIT CONFORMANCE	AFTER RAIN	X	X		X			
RESTORE TO PERMIT CONFORMANCE	WEEKLY	X	X		X			
INSPECT FOR SOIL EROSION	AFTER RAIN							X
RESTORE TO PREVENT EROSION	AS NEEDED							X
SCRAPE STREET/DRIVES	DAILY							
SWEEP STREET/DRIVES	WEEKLY							

SESC MAINTENANCE SCHEDULE

CONSTRUCTION PHASES	2018 SEP	OCT	NOV	DEC	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
MOBILIZATION	X											
PLACE SESC DEVICES / INSTALL TRACKING PAD	X											
STRIP AND STOCKPILE TOPSOIL	X	X	X									
ROUGH GRADING / SEDIMENT CONTROL	X	X	X									
TEMPORARY CONTROL MEASURES	X	X	X	X	X	X	X	X	X	X	X	X
RESTORATION/TURF ESTABLISHMENT		X	X	X	X	X	X	X	X	X	X	X
REMOVE SESC DEVICES												X
PROJECT COMPLETE												X

CONSTRUCTION DATES ARE SUBJECT TO CHANGE.
CONTRACTOR SHALL PROVIDE UPDATED SCHEDULE PRIOR TO CONSTRUCTION.

CONSTRUCTION SEQUENCE

SUPPLEMENTAL SOIL EROSION CONTROL NOTES:

1. ALL EXISTING AND PROPOSED CATCH BASINS SHALL HAVE INLET FILTERS INSTALLED DURING THE DURATION OF CONSTRUCTION.
2. NO FLOODPLAINS ARE ON THE SITE
3. EROSION CONTROL BLANKETS (MULCH BLANKETS) SHALL BE:
   - NORTH AMERICAN GREEN BIONET C125BN
   - OR EAST COAST EROSION CONTROL ECC-2B BIODEGRADABLE DOUBLE COCONUT
   - OR APPROVED EQUAL
5. RESTORATION OF DISTRBED AREAS NOT REQUIRING SEED AND MULCH BLANKETS SHALL BE RESTORED WITH SEED/MULCH OR HYDROSEED.

6	Seeding with Mulch and/or Matting	Facilitates establishments of vegetative cover Effective for drainageways with low velocity. Easily placed in small quantities by inexperinced personnel. Shall include prepared topsoil be and straw mulch. Shall use a Mulch Blanket when slopes are 6H:1V or steeper.	PERMANENT MEASURE
7	Hydro seeding	Effective on large areas. Mulch tacking agent used to provide immediate protection until grass is rooted. Shall include prepared topsoil bed.	PERMANENT MEASURE
14	Aggregate Cover	Tracking Mat – replenish stone as required due to rutting. 1"-3" crushed concrete 8" thick on geo-fabric. 25' wide by 50' long. Temporary measure, remove after completion of construction.	TEMPORARY MEASURE
36	Catch Basin, Drain Inlet	Collects high velocity concentrated runoff. Use Inlet Filter Sack as TEMPORARY MEASURE	PERMANENT MEASURE
54	Silt Fence	Filters and detains runoff. Shown on plan as ——— SF ———	TEMPORARY MEASURE

GRAPHIC SCALE: 1 inch = Value feet
0 ## Value ### ###

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DATE
PROJ NUMBER 1053-19-0010
ENG Value
PROJ MGR Value
CADD Value
COUNTY Value
MUNICIPALITY Value

CITY OF BATTLE CREEK
BUCKNER DR
COLUMBIA - SESC PLAN

SHEET CS-170

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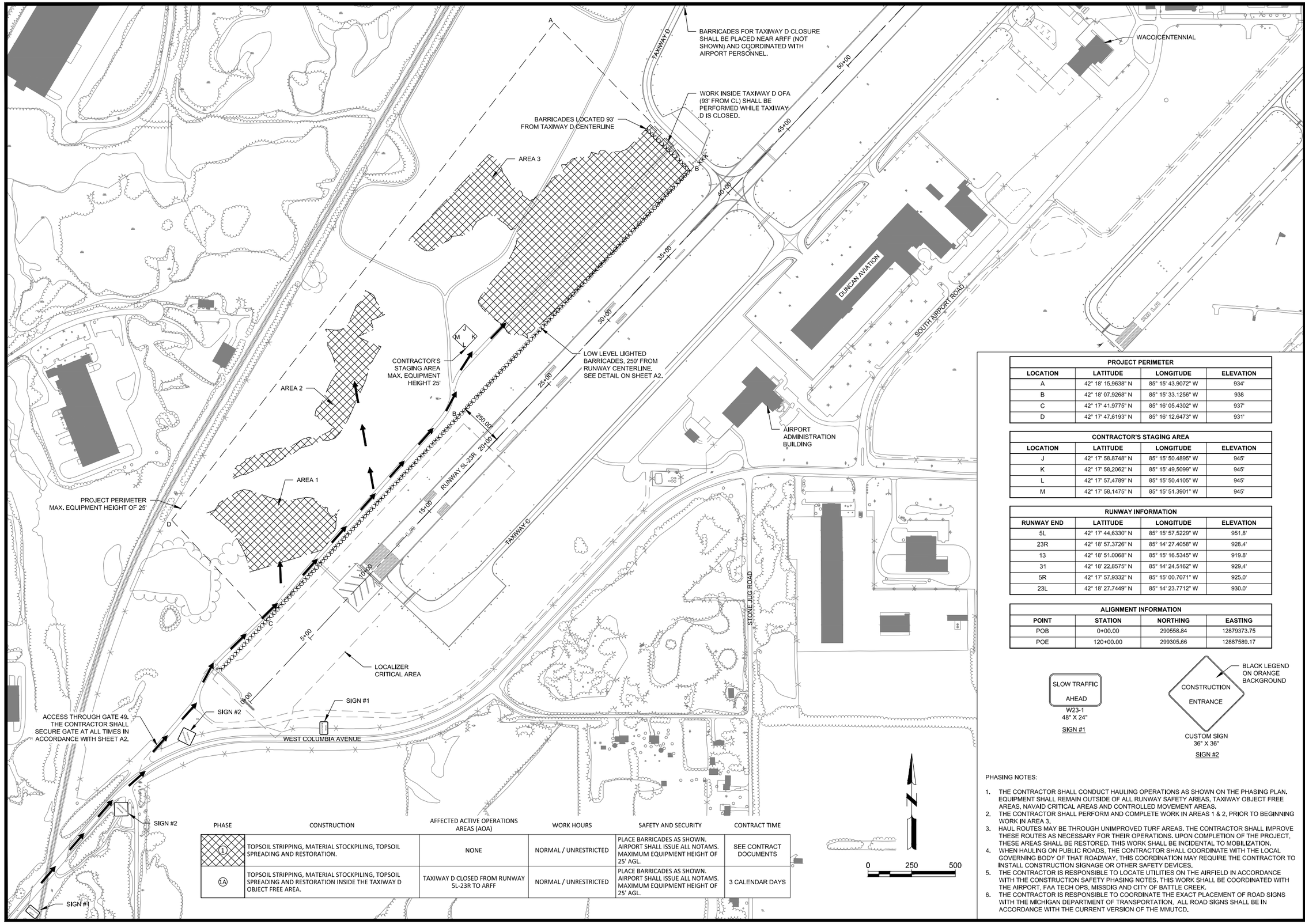

PHASE	CONSTRUCTION	AFFECTED ACTIVE OPERATIONS AREAS (AOA)	WORK HOURS	SAFETY AND SECURITY	CONTRACT TIME
1	TOPSOIL STRIPPING, MATERIAL STOCKPILING, TOPSOIL SPREADING AND RESTORATION.	NONE	NORMAL / UNRESTRICTED	PLACE BARRICADES AS SHOWN. AIRPORT SHALL ISSUE ALL NOTAMS. MAXIMUM EQUIPMENT HEIGHT OF 25' AGL.	SEE CONTRACT DOCUMENTS
1A	TOPSOIL STRIPPING, MATERIAL STOCKPILING, TOPSOIL SPREADING AND RESTORATION INSIDE THE TAXIWAY D OBJECT FREE AREA.	TAXIWAY D CLOSED FROM RUNWAY 5L-23R TO ARFF	NORMAL / UNRESTRICTED	PLACE BARRICADES AS SHOWN. AIRPORT SHALL ISSUE ALL NOTAMS. MAXIMUM EQUIPMENT HEIGHT OF 25' AGL.	3 CALENDAR DAYS

PROJECT PERIMETER			
LOCATION	LATITUDE	LONGITUDE	ELEVATION
A	42° 18' 15.9638" N	85° 15' 43.9072" W	934'
B	42° 18' 07.9268" N	85° 15' 33.1256" W	938
C	42° 17' 41.9775" N	85° 16' 05.4302" W	937'
D	42° 17' 47.6193" N	85° 16' 12.6473" W	931'

CONTRACTOR'S STAGING AREA			
LOCATION	LATITUDE	LONGITUDE	ELEVATION
J	42° 17' 58.8748" N	85° 15' 50.4895" W	945'
K	42° 17' 58.2062" N	85° 15' 49.5099" W	945'
L	42° 17' 57.4789" N	85° 15' 50.4105" W	945'
M	42° 17' 58.1475" N	85° 15' 51.3901" W	945'

RUNWAY INFORMATION			
RUNWAY END	LATITUDE	LONGITUDE	ELEVATION
5L	42° 17' 44.6330" N	85° 15' 57.5229" W	951.8'
23R	42° 18' 57.3726" N	85° 14' 27.4058" W	928.4'
13	42° 18' 51.0068" N	85° 15' 16.5345" W	919.8'
31	42° 18' 22.8575" N	85° 14' 24.5162" W	929.4'
5R	42° 17' 57.9332" N	85° 15' 00.7071" W	925.0'
23L	42° 18' 27.7449" N	85° 14' 23.7712" W	930.0'

ALIGNMENT INFORMATION			
POINT	STATION	NORTHING	EASTING
POB	0+00.00	290558.84	12879373.75
POE	120+00.00	299305.66	12887589.17

W23-1
48" X 24"
SIGN #1

BLACK LEGEND ON ORANGE BACKGROUND

CUSTOM SIGN
36" X 36"
SIGN #2

PHASING NOTES:

1. THE CONTRACTOR SHALL CONDUCT HAULING OPERATIONS AS SHOWN ON THE PHASING PLAN. EQUIPMENT SHALL REMAIN OUTSIDE OF ALL RUNWAY SAFETY AREAS, TAXIWAY OBJECT FREE AREAS, NAVAID CRITICAL AREAS AND CONTROLLED MOVEMENT AREAS.
2. THE CONTRACTOR SHALL PERFORM AND COMPLETE WORK IN AREAS 1 & 2, PRIOR TO BEGINNING WORK IN AREA 3.
3. HAUL ROUTES MAY BE THROUGH UNIMPROVED TURF AREAS, THE CONTRACTOR SHALL IMPROVE THESE ROUTES AS NECESSARY FOR THEIR OPERATIONS. UPON COMPLETION OF THE PROJECT, THESE AREAS SHALL BE RESTORED. THIS WORK SHALL BE INCIDENTAL TO MOBILIZATION.
4. WHEN HAULING ON PUBLIC ROADS, THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL GOVERNING BODY OF THAT ROADWAY. THIS COORDINATION MAY REQUIRE THE CONTRACTOR TO INSTALL CONSTRUCTION SIGNAGE OR OTHER SAFETY DEVICES.
5. THE CONTRACTOR IS RESPONSIBLE TO LOCATE UTILITIES ON THE AIRFIELD IN ACCORDANCE WITH THE CONSTRUCTION SAFETY PHASING NOTES. THIS WORK SHALL BE COORDINATED WITH THE AIRPORT, FAA TECH OPS, MISSDIG AND CITY OF BATTLE CREEK.
6. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE THE EXACT PLACEMENT OF ROAD SIGNS WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION. ALL ROAD SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT VERSION OF THE MMUTCD.

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STATE OF MICHIGAN
JEFFREY E. THOMAN
ENGINEER
6QZ
57463
LICENSED PROFESSIONAL ENGINEER

W.K. KELLOGG AIRPORT
WEST SIDE MASS GRADING - PHASE II

15551 SOUTH AIRPORT ROAD
BATTLE CREEK, MI 49015

ISSUED

07.06.18 ISSUED FOR BID

M&H NO.: 0228800-180295.01
DATE: JULY 06, 2018
DESIGNED BY: JET
DRAWN BY: JET
CHECKED BY: JET
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SHEET CONTENTS

AIRPORT CONSTRUCTION SAFETY AND PHASING PLAN

SHEET NO.

A1

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THE FOLLOWING NOTES SHALL BE ADHERED TO WHILE WORKING ON THE AIRPORT AND ARE IN ACCORDANCE WITH FAA AC 5370-2G, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.

GENERAL CONSIDERATIONS:
AIRPORT OPERATORS, OR TENANTS CONDUCTING CONSTRUCTION ON LEASED PROPERTIES, SHALL USE THE PRE-DESIGN, PRE-BID, AND PRE-CONSTRUCTION MEETINGS TO INTRODUCE AIRPORT OPERATIONAL SAFETY DURING CONSTRUCTION. COORDINATE THE FOLLOWING AS REQUIRED:

A. AIRPORT OPERATIONAL SAFETY SHALL BE A STANDING AGENDA ITEM DURING EVERY PROGRESS MEETING.

B. CHANGES IN THE SCOPE OR DURATION OF THE PROJECT MAY REQUIRE REVISIONS TO THE SAFETY PHASING PLAN (AND REVIEW AND APPROVAL BY THE AIRPORT OPERATOR AND FAA). **REVISIONS WILL BE THE RESPONSIBILITY OF THE AIRPORT OR ENGINEER.**

C. EARLY COORDINATION WITH FAA ATO IS REQUIRED TO SCHEDULE AIRWAY FACILITY SHUTDOWNS AND RESTARTS. RELOCATION OR ADJUSTMENTS TO NAVAIDS OR THEIR CRITICAL AREAS MAY REQUIRE A FAA FLIGHT INSPECTION PRIOR TO RESTARTING THE FACILITY. FLIGHT INSPECTIONS MUST BE COORDINATED WELL IN ADVANCE AND MAY REQUIRE A REIMBURSABLE AGREEMENT BETWEEN THE AIRPORT AND FAA ATO. REIMBURSABLE AGREEMENTS SHOULD BE COORDINATED A MINIMUM OF 12 MONTHS PRIOR TO THE START OF CONSTRUCTION.

AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION ACTIVITY:
SEE THE CONSTRUCTION SAFETY PHASING PLAN (CSPP) FOR A DEPICTION OF THE CONSTRUCTION. THIS DRAWING INCLUDES ALL AFFECTED AREAS AND THE DESCRIPTION OF MITIGATION FOR ALL CONSTRUCTION PHASES.

NAVAIDS:
A. IF THIS PROJECT AFFECTS RUNWAY NAVAIDS, COORDINATION WITH LOCAL TECHNICAL OPERATIONS WILL BEGIN AT THE PRECONSTRUCTION MEETING. A LIST OF RESPONSIBLE PARTY REPRESENTATIVES, INCLUDING PROCEDURES FOR CONTACT AFTER-HOURS, SHALL BE PROVIDED TO THE CONTRACTOR PRIOR TO CONSTRUCTION. A 45-DAY MINIMUM NOTICE SHALL BE PROVIDED TO FAA ATO/TECH OPS REGARDING SHUT-DOWN OF A NAVAID MORE THAN 24 HOURS OR MORE THAN 4 HOURS ON CONSECUTIVE DAYS. **ALL COORDINATION WITH THE FAA ATO/TECH OPS WILL BE THE RESPONSIBILITY OF THE AIRPORT OR ENGINEER.**

B. BEFORE COMMENCING CONSTRUCTION ACTIVITY, PARKING VEHICLES, OR STORING CONSTRUCTION EQUIPMENT AND MATERIALS NEAR A NAVAID, COORDINATE WITH THE APPROPRIATE FAA ATO/TECH OPS OFFICE TO EVALUATE THE EFFECT OF CONSTRUCTION ACTIVITY AND THE REQUIRED DISTANCE AND DIRECTION FROM THE NAVAID. SEE THE CSPP FOR APPLICABLE NAVAID CRITICAL AREAS. **ALL COORDINATION WITH THE FAA ATO/TECH OPS WILL BE THE RESPONSIBILITY OF THE AIRPORT OR ENGINEER.**

C. INTERFERENCE FROM CONSTRUCTION EQUIPMENT AND ACTIVITIES MAY REQUIRE NAVAID SHUTDOWN OR ADJUSTMENT OF INSTRUMENT APPROACH MINIMUMS FOR LOW VISIBILITY OPERATIONS. THIS REQUIRES THAT A NOTAM BE FILED.

CONTRACTOR ACCESS:
A. THE CONTRACTOR SHALL PROVIDE A GATE GUARD AT ALL POINTS OF ENTRY USED BY THE CONTRACTOR. GATES MUST BE LOCKED WHEN NOT IN USE OR NOT GUARDED BY THE CONTRACTOR. AIRPORT OPERATORS AND CONTRACTORS MUST TAKE CARE TO MAINTAIN A HIGH LEVEL OF SAFETY AND SECURITY DURING CONSTRUCTION WHEN ACCESS POINTS ARE CREATED IN THE SECURITY FENCING TO PERMIT THE PASSAGE OF CONSTRUCTION VEHICLES OR PERSONNEL. TEMPORARY GATES SHOULD BE EQUIPPED SO THEY CAN BE SECURELY CLOSED AND LOCKED TO PREVENT ACCESS BY ANIMALS AND PEOPLE. PROCEDURES SHOULD BE IN PLACE TO ENSURE THAT ONLY AUTHORIZED PERSONS AND VEHICLES HAVE ACCESS TO THE AOA, AND TO PROHIBIT PIGGYBACKING BEHIND ANOTHER VEHICLE.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER OPERATION AND PRESERVATION OF ALL AIRFIELD PERIMETER GATES, EITHER MANUAL OR AUTOMATED. FOR THE PURPOSES OF THIS CONTRACT, ALL FENCING/GATES SHALL BE CONSIDERED PART OF CONTRACTOR HAUL ROUTES. AS SUCH, ANY DAMAGE TO FENCING/GATES AS A RESULT OF CONSTRUCTION TRAFFIC SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

B. STOCKPILED MATERIALS AND EQUIPMENT STORAGE ARE NOT PERMITTED WITHIN THE SAFETY AREA OR OBJECT FREE AREA OF AN OPERATIONAL RUNWAY OR TAXIWAY (OFA STOCKPILES REQUIRE FAA APPROVAL). IF THE CONTRACTOR WISHES TO STOCKPILE MATERIALS OR EQUIPMENT ADJACENT TO AN OFA. HE MUST FIRST COORDINATE WITH THE ENGINEER AND AIRPORT OPERATOR TO ENSURE THAT 1) APPROPRIATE LIGHTING AND BARRICADES ARE IN PLACE, AND 2) THE STOCKPILED MATERIALS DO NOT CREATE A WILDLIFE ATTRACTANT OR FOREIGN OBJECT DEBRIS (FOD) HAZARD, EXCAVATION AND RESULTANT STOCKPILES ADJACENT TO OTHER PAVED SURFACES MUST BE APPROPRIATELY MARKED WITH BARRICADES, AS DIRECTED BY THE ENGINEER.

C. THE CONTRACTORS' EQUIPMENT IS STRICTLY LIMITED TO THE CONSTRUCTION AREAS DURING CONSTRUCTION AND TO THE CONTRACTOR STORAGE AREA DURING NON-CONSTRUCTION PERIODS, EXCEPT AS PROVIDED ON THE PLANS, IN THE CONTRACT SPECIAL PROVISIONS, OR AS MAY BE AUTHORIZED BY THE ENGINEER IN WRITING. CONTRACTOR PARKING SHALL BE LIMITED TO THE STAGING AREA, EXCEPT AS ALLOWED BY THE AIRPORT.

D. HAUL ROUTES AND ACCESS TO THE CONSTRUCTION SITE(S) WILL BE AS SHOWN ON THE CONSTRUCTION PHASING SHEET AND DISCUSSED AT THE PRE-BID MEETING. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL HAUL ROADS, PLANT SITES, STAGING AND STORAGE AREAS TO ORIGINAL CONDITION OR TO THE SATISFACTION OF THE ENGINEER/AIRPORT. THIS WILL INCLUDE BUT NOT BE LIMITED TO GRADING (FILLING IF NECESSARY) AND SEEDING AND MULCHING ALL TURF AREAS USED BY THE CONTRACTOR. ANY PAVEMENT AREAS USED BY THE CONTRACTOR AS A HAUL ROUTE WHICH ARE DAMAGED WILL BE REPAVED AS APPROVED BY THE PROJECT ENGINEER AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL INSPECT ALL HAUL ROUTES PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY DOCUMENTATION OF EXISTING HAUL ROUTES, EITHER WITH PICTURES OR VIDEO. ANTICIPATED COSTS ASSOCIATED WITH DOCUMENTING EXISTING HAUL ROUTE CONDITIONS, OR RECONSTRUCTING OR RESTORING HAUL ROUTES AND STORAGE AREAS, WILL BE INCLUDED IN MOBILIZATION.

E. CONSTRUCTION EQUIPMENT:
ALL CONSTRUCTION EQUIPMENT MUST BE MARKED WITH A 3 FEET BY 3 FEET ORANGE AND WHITE CHECKERED FLAG AND/OR AMBER BEACON. FOR NIGHT CONSTRUCTION, ALL EQUIPMENT MUST BE EQUIPPED WITH AN AMBER BEACON. ALL CONSTRUCTION VEHICLES MUST BE CLEARLY MARKED WITH THE COMPANY NAME/LOGO AT ALL TIMES. MARKING AND LIGHTING SHALL OTHERWISE BE IN ACCORDANCE WITH AC 150/5210-5.

F. AIRPORT RADIOS, FLAG PERSON AND DRIVER TRAINING:
THE CONTRACTOR SHALL COMPLY WITH ALL SECURITY REQUIREMENTS OF THE AIRPORT. THE AIRPORT IS CONSIDERED A CONTROLLED AIRPORT BETWEEN THE HOURS OF 6 AM AND 11 PM. THE CONTRACTOR MUST DESIGNATE ONE OF THE SUPERINTENDENTS ON-SITE TO MAINTAIN CONTACT WITH THE AIR TRAFFIC CONTROL TOWER (ATCT) VIA RADIO AT ALL TIMES WORK IS BEING DONE ON THE AIRFIELD. THAT INCLUDES DAYS WHEN SUBCONTRACTORS MAY BE WORKING BUT THE PRIME CONTRACTOR IS NOT. THE RADIO FREQUENCY FOR THE AIRPORT GROUND CONTROL IS 121.7. RADIOS ARE NOT AVAILABLE FROM THE AIRPORT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AN ADEQUATE NUMBER OF RADIOS FOR THEIR OPERATIONS. TRAINING OF CONTRACTORS ON PROPER COMMUNICATION PROCEDURES IS ESSENTIAL FOR MAINTAINING AIRPORT OPERATIONAL SAFETY. IF THE AIRPORT PROVIDES RADIO COMMUNICATION TRAINING, CONTRACTOR ATTENDANCE WILL BE REQUIRED PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL BE REQUIRED TO HAVE A TRAINED FLAG PERSON EQUIPPED WITH AN AIRPORT RADIO OPERATING ON121.7 MHz TO ESCORT ANY CONTRACTOR VEHICLES WHEN CROSSING ACTIVE AOA'S. COST OF MAINTAINING THE FLAG PERSON SHALL BE INCLUDED IN MOBILIZATION. KEY CONTRACTOR PERSONNEL MAY BE EXPECTED TO TRAVEL ON OR NEAR ACTIVE AOA'S. THESE INDIVIDUALS MUST COMPLY WITH THE AIRPORT OPERATOR'S RULES AND REGULATIONS BY PARTICIPATING IN ANY APPLICABLE AIRFIELD DRIVER'S TRAINING PROCEDURES PROVIDED BY THE AIRPORT.

BETWEEN THE HOURS OF 11 PM AND 6 AM, THE AIRFIELD IS CONSIDERED UNCONTROLLED. IF WORK IS BEING PERFORMED DURING THESE HOURS, THE CONTRACTOR SHALL MONITOR THE CIVILIAN AIR TRAFFIC FREQUENCY (CTAF) AT 126.825. THE CONTRACTOR SHALL BE PREPARED TO RESPOND TO ANY AIRCRAFT IN THE AREA USING THE CTAF FREQUENCY IF AND ONLY IF THEIR ANNOUNCED ACTIONS ARE DIRECTLY IMPACTED BY THE CONSTRUCTION ACTIVITY.

G. MAINTENANCE OF THE SECURED AREA: SEE ITEM (A) ABOVE.

WILDLIFE MANAGEMENT:
A. THE CSPP AND SPCD MUST BE IN COMPLIANCE WITH THE AIRPORT'S WILDLIFE MANAGEMENT PLAN, IF APPLICABLE.

B. CONTRACTORS MUST CAREFULLY CONTROL AND CONTINUOUSLY REMOVE WASTE OR LOOSE MATERIALS THAT CAN CREATE WILDLIFE HAZARDS OR ATTRACTANTS. THESE INCLUDE TRASH, STANDING WATER, TALL GRASS, SCATTERED SEEDS, POORLY MAINTAINED FENCING, AND DISRUPTION OF EXISTING HABITAT.

FOREIGN OBJECT DEBRIS MANAGEMENT:
A. DEBRIS SHALL NOT BE DEPOSITED ON ANY PORTION OF AN OPERATIONAL RUNWAY, TAXIWAY OR APRON, SHOULD ANY DEBRIS BE ACCIDENTALLY DEPOSITED ON ACTIVE OPERATIONAL AREAS, IT SHALL BE REMOVED IMMEDIATELY. THE CONTRACTOR SHALL HAVE SWEEPING AND/OR VACUUMING CAPABILITIES ON-SITE IN ORDER TO CONTINUOUSLY REMOVE DEBRIS FROM ACTIVE OPERATIONAL AREAS DURING THE CONSTRUCTION PROJECT. PRIOR TO OPENING AIRCRAFT MOVEMENT AREAS CLOSED FOR THIS PROJECT, THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SITE, INCLUDING ADJACENT PAVEMENTS AND HAUL ROUTES, IS CLEAR OF ANY FOREIGN OBJECT DEBRIS (FOD) AND IS ACCEPTABLE TO THE AIRPORT. THE CONTRACTOR SHALL CONDUCT DAILY INSPECTIONS OF THE WORK AND ADJACENT AREAS FOR SAFETY AND CLEANLINESS. THE AIRPORT MAY ALSO PERFORM DAILY INSPECTIONS. UPON COMPLETION OF THIS PROJECT, THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SITE, INCLUDING ADJACENT PAVEMENTS AND HAUL ROUTES, IS RETURNED TO ORIGINAL CONDITION.

B. CONTRACTOR SHALL USE ALL MEANS NECESSARY TO MINIMIZE DUST DURING CONSTRUCTION OPERATIONS. IF THE AIRPORT OR ENGINEER REQUESTS DUST CONTROL IT SHALL BE APPLIED IMMEDIATELY.

HAZARDOUS MATERIALS MANAGEMENT:
A. ANY TYPE OF FUELING SUPPORT FACILITY OR DEVICE USED TO REFUEL CONSTRUCTION EQUIPMENT IS SUBJECT TO LOCAL FIRE INSPECTION. LOCAL FIRE CODES AND SAFETY STANDARDS SHALL BE MET PRIOR TO COMMENCEMENT OF WORK.

B. CONTRACTORS OPERATING CONSTRUCTION VEHICLES AND EQUIPMENT ON THE AIRPORT MUST BE PREPARED TO EXPEDITIOUSLY CONTAIN AND CLEAN UP SPILLS RESULTING FROM FUEL OR HYDRAULIC FLUID LEAKS.

C. TRANSPORT AND HANDLING OF OTHER HAZARDOUS MATERIALS ALSO REQUIRE SPECIAL PROCEDURES (SEE AC 150/5320-15, MANAGEMENT OF AIRPORT INDUSTRIAL WASTE).

NOTIFICATION OF CONSTRUCTION ACTIVITIES:
A. THE CONTRACTOR SHALL INCLUDE IN THE SPCD A PROCEDURE FOR IMMEDIATE NOTIFICATION OF THE AIRPORT AND LOCAL FAA OF ANY ADVERSE CONDITIONS AFFECTING SAFETY ON THE AIRPORT. THE CONTRACTOR SHALL OBTAIN CONTACT INFORMATION FOR ALL INVOLVED PARTIES AND PROCEDURES FOR CONTACTING THEM 24 HOURS A DAY, 7 DAYS A WEEK.

B. IF APPLICABLE A LIST OF LOCAL FAA ATO PERSONNEL, ATCT MANAGERS ON DUTY, AUTHORIZED REPRESENTATIVES TO THE FAA OPERATIONS CONTROL CENTER (OCC) WILL BE DISTRIBUTED.

C. THE AIRPORT SHALL ISSUE ALL NOTAMS RELEVANT TO THE CONSTRUCTION PROGRESS. THE AIRPORT OPERATOR SHALL PROVIDE INFORMATION ON CLOSED OR HAZARDOUS CONDITIONS TO THE OCC.

D. THE CONTRACTOR SHALL PREPARE AND SUBMIT CONTACT INFORMATION FOR LOCAL MEDICAL, FIRE FIGHTING, AND POLICE RESPONSE IN CASE OF EMERGENCIES DURING CONSTRUCTION.

E. THE CONTRACTOR SHALL BE REQUIRED TO COORDINATE WITH AIRPORT ARFF PERSONNEL (IF APPLICABLE) EVEN FOR NON-EMERGENCIES.

F. PER 14 CFR PART 77, THIS CSPP HAS BEEN SUBMITTED TO THE FAA BY THE TIME OF CONSTRUCTION. 14 CFR PART 157 IS NOT APPLICABLE TO THIS PROJECT.

INSPECTION REQUIREMENTS:
A. AIRPORT SAFETY SELF-INSPECTIONS SHOULD BE CONDUCTED BY THE CONTRACTOR AT LEAST DAILY, BUT MORE FREQUENTLY IF NECESSARY TO CONFORM WITH THE CSPP. A SAMPLE DAILY INSPECTION CHECKLIST IS AVAILABLE IN APPENDIX 4 OF AC 150/5370-2F.

B. A FINAL INSPECTION MEETING WILL ALSO BE HELD FOR THIS PROJECT.

UNDERGROUND UTILITIES:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF EXISTING AIRPORT UTILITIES, AND ELECTRICAL CIRCUITS, WHETHER OWNED BY THE AIRPORT OR OTHER AGENCIES OPERATING AT THE AIRPORT. LOCATIONS OF EXISTING CABLE SHOWN IN THE PLANS ARE BASED ON AVAILABLE AS-BUILT DATA AND ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ANY CROSSING OF UNDERGROUND ELECTRICAL CIRCUITS WITH THE AIRPORT AND FAA FACILITIES PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL PROVIDE TONING EQUIPMENT CAPABLE OF DETECTING A 60 Hz SIGNAL FOR LOCATING CABLES IN THE CONSTRUCTION AREA. WORKING IN CONJUNCTION WITH THE AIRPORT, THE CONTRACTOR SHALL LOCATE EXISTING CABLES PRIOR TO START OF CONSTRUCTION. COST OF LOCATING THE CABLES AND PROVIDING THE TONING EQUIPMENT SHALL BE INCLUDED IN MOBILIZATION. ANY ELECTRICAL CIRCUITS TO BE CROSSED SHALL THEN BE TESTED FOR RESISTANCE TO GROUND BY THE CONTRACTOR UNDER SUPERVISION OF THE ENGINEER AND THE READINGS RECORDED. FOLLOWING CONSTRUCTION, THE CONTRACTOR, UNDER THE SUPERVISION OF THE ENGINEER, SHALL CHECK ALL CIRCUITS CROSSED DURING THE PROJECT, ANY CIRCUITS SHOWING A DECREASE IN RESISTANCE TO GROUND SHALL BE CORRECTED BY THE CONTRACTOR SO AS TO PROVIDE AT LEAST 50 MEGOHMS RESISTANCE IN THAT CIRCUIT. NO ADDITIONAL COMPENSATION WILL BE MADE FOR ANY CORRECTIVE ELECTRICAL WORK DUE TO CONTRACTOR'S OPERATIONS. SEE ELECTRICAL CABLE SPECIFICATIONS FOR REPAIR AND SPLICING REQUIREMENTS.

PENALTIES:
A. THIS PROJECT INVOLVES WORK NEAR ACTIVE AIRCRAFT OPERATIONAL AREAS. ANY RUNWAY OR TAXIWAY INCURSIONS OCCURRING DURING THE PROJECT, AS DETERMINED BY THE JUDGEMENT OF THE ENGINEER AND/OR AIRPORT, MAY BE SUBJECT TO FAA FINES IN EXCESS OF $10,000. FAA DEFINES A RUNWAY INCURSION AS "ANY OCCURRENCE AT AN AERODROME INVOLVING THE INCORRECT PRESENCE OF AN AIRCRAFT, VEHICLE OR PERSON ON THE PROTECTED AREA OF A SURFACE DESIGNATED FOR THE LANDING AND TAKE OFF OF AIRCRAFT."

SPECIAL CONDITIONS:
A. SPECIAL INSURANCE PROVISIONS: CONTACT THE CITY OF BATTLE CREEK FOR SPECIAL INSURANCE REQUIREMENTS.

RUNWAY & TAXIWAY VISUAL AIDS–MARKING, LIGHTING, SIGNS, AND VISUAL NAVAIDS:
A. AIRPORT MARKINGS, LIGHTING, SIGNS, AND VISUAL NAVAIDS MUST BE CLEARLY VISIBLE TO PILOTS, NOT MISLEADING, CONFUSING OR DECEPTIVE. ALL MUST BE SECURED IN PLACE TO PREVENT MOVEMENT BY PROP WASH, JET BLAST, WING VORTICES OR OTHER WIND CURRENTS, BUT FRANGIBLE AND CONSTRUCTED OF MATERIALS THAT WOULD MINIMIZE DAMAGE TO AN AIRCRAFT IN THE EVENT OF INADVERTENT CONTACT.

B. THE FOLLOWING ARE APPLICABLE STANDARDS FOR ANY TEMPORARY OR PERMANENT INSTALLATIONS OF THESE RESPECTIVE ITEMS:
AIRPORT MARKINGS: AC 150/5340-1
LIGHTING: AC 150/5340-30, 150/5345-50, 150/5345-53
SIGNAGE: AC 150/5345-44, 150/5340-18, 150/5345-53

C. SHOULD A RUNWAY BE TEMPORARILY CLOSED AND REQUIRE A CLOSURE CROSS, THE CONTRACTOR SHALL MARK THE AFFECTED RUNWAY WITH A CLOSURE CROSS IN ACCORDANCE WITH THE CLOSURE CROSS SPECIFICATIONS FOUND IN THE PLANS. CLOSURE CROSSES SHALL REMAIN IN PLACE UNTIL NORMAL RUNWAY OPERATIONS RESUME. WHEN NECESSARY TO CLOSE, OR CHANGE THE STANDARD OPERATIONS OF A RUNWAY OR TAXIWAY, THE CONTRACTOR SHALL, THROUGH THE ENGINEER, NOTIFY THE AIRPORT 72 BUSINESS HOURS IN ADVANCE OF THE PROPOSED CHANGE IN OPERATIONS.

MARKING AND SIGNS FOR ACCESS ROUTES:
A. PAVEMENT MARKINGS AND SIGNS INTENDED FOR CONSTRUCTION PERSONNEL SHOULD CONFORM TO AC 150/5340-18, AND WITH THE MUTCD AND/OR STATE HIGHWAY SPECIFICATIONS AS PRACTICAL.

HAZARD MARKING AND LIGHTING:
A. IF ANY AIRCRAFT MOVEMENT AREAS MUST BE CLOSED, THE CONTRACTOR SHALL FURNISH AND PLACE PORTABLE BARRICADES ACROSS RUNWAYS OR TAXIWAYS TO KEEP VEHICLES FROM ENTERING ACTIVE OPERATION AREAS AND TO KEEP AIRCRAFT FROM TAXIING INTO CONSTRUCTION AREAS. BARRICADES SHALL BE HIGHLY-REFLECTIVE, MARKED WITH DIAGONAL, ALTERNATING ORANGE AND WHITE STRIPES AND SUPPLEMENTED WITH EITHER FLASHING OR STEADY-BURNING LIGHTS DURING HOURS OF RESTRICTED VISIBILITY OR DARKNESS. LIGHTS SHALL BE BARRICADE TYPE TYPICAL FOR CONSTRUCTION ZONES AND RED IN COLOR, MEETING ALL STATE HIGHWAY REQUIREMENTS. BARRICADES LOCATED WITHIN AIRCRAFT MOVEMENT AREAS (RUNWAYS, TAXIWAYS, APRONS) SHALL BE LOW LEVEL AVIATION BARRICADES (NO HIGHER THAN 18") SPECIFICALLY MANUFACTURED AND DESIGNED FOR SUCH PURPOSE. THEY SHALL BE ALTERNATING ORANGE AND WHITE IN COLOR 10" HIGH AND 96" LONG, MADE OF UV-RESISTANT POLYETHYLENE AS MANUFACTURED BY MULTI-BARRIER (MODEL AR 10x96 HDPE), OR APPROVED EQUAL. ENOUGH BARRICADES MUST BE PROVIDED TO SAFELY DELINEATE ALL CONSTRUCTION BOUNDARIES. BARRICADES SHALL BE PLACED CLOSELY ENOUGH TO PREVENT TRAFFIC FROM ENTERING THE CONSTRUCTION AREA, GENERALLY NO MORE THAN 4 FEET APART. BARRICADES SHALL BE FILLED WITH WATER TO PREVENT MOVEMENT BY JET BLAST. BARRICADES LOCATED OUTSIDE OF AIRCRAFT MOVEMENT AREAS MAY BE MADE FROM VARIOUS MATERIALS, INCLUDING RAILROAD TIES, SAWHORSES, JERSEY BARRICADES, BARRELS, OR OTHER STANDARD HIGHWAY BARRICADES. IF BARRICADES ARE SUBJECT TO PROP WASH, JET BLAST, WIND VORTEX OR ANY OTHER SURFACE WIND CURRENTS, THE BARRICADES WILL BE WEIGHTED OR FASTENED TO THE GROUND TO PREVENT DISPLACEMENT.

B. HAZARDS SUCH AS OPEN MANHOLES, AREAS UNDER REPAIR, STOCKPILE AND WASTE AREAS SHOULD ALSO BE MARKED.

C. THE CONTRACTOR MUST ALSO PROVIDE AN EMERGENCY CONTACT AVAILABLE 24 HOURS FOR MAINTENANCE OF CONSTRUCTION LIGHTING AND BARRICADING.

D. USE HIGHLY REFLECTIVE BARRICADES WITH LIGHTS TO CLOSE TAXIWAYS LEADING TO CLOSED RUNWAYS. CLOSE RUNWAY/TAXIWAY INTERSECTIONS WITH BARRICADES EVEN FOR SHORT (TEMPORARY) CLOSURES.

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MOVEMENT OF BARRICADES BETWEEN PHASES, OR AS OTHERWISE CRITICAL TO AIRPORT OPERATIONS. ALL BARRICADE LIGHTS MUST BE CHECKED NIGHTLY, AND REPLACED BY THE CONTRACTOR IF NOT FUNCTIONING. CONTRACTOR SHALL BE COMPENSATED FOR COST OF ALL BARRICADES, THEIR MAINTENANCE AND MOVEMENT UNDER MOBILIZATION.

PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS:
A. CONSTRUCTION ACTIVITY ADJACENT TO ACTIVE RUNWAYS, TAXIWAYS, AND APRONS SHALL BE COORDINATED WITH AIRPORT OPERATIONS THROUGH THE ENGINEER. CONSTRUCTION ACTIVITY IN THESE AREAS WILL BE AUTHORIZED AFTER 1) NOTICES TO AIRMEN (NOTAM'S) HAVE BEEN ISSUED BY THE AIRPORT, 2) BARRICADING AND LIGHTING PROVISIONS HAVE BEEN IMPLEMENTED BY THE CONTRACTOR, AND 3) IT HAS BEEN DETERMINED THAT THE HEIGHT OF EQUIPMENT AND MATERIALS IS BEYOND THE REACH, OR SAFELY BELOW, AIRCRAFT USING ADJACENT OPERATION AREAS. THE ENGINEER WILL SUPPLY INFORMATION FOR RUNWAY APPROACHES AND OTHER AREAS IF REQUIRED.

B. NO CONSTRUCTION MAY OCCUR WITHIN AN EXISTING RUNWAY OR TAXIWAY SAFETY AREA WHILE THE RUNWAY/TAXIWAY IS OPEN TO AIRCRAFT OPERATIONS. OPEN TRENCHES OR EXCAVATIONS ARE NOT PERMITTED WITHIN THE SAFETY AREA OF AN OPEN RUNWAY/TAXIWAY. IF THE RUNWAY/TAXIWAY MUST BE OPENED BEFORE EXCAVATIONS ARE BACKFILLED, THE EXCAVATIONS MUST BE COVERED IN SUCH A WAY AS TO ALLOW THE HEAVIEST AIRCRAFT OPERATING ON THE RUNWAY/TAXIWAY TO CROSS THE COVERING WITHOUT DAMAGE, THE SAFETY AREA MUST BE GRADED WITH NO POTENTIALLY HAZARDOUS RUTS, HUMPS, DEPRESSIONS, OR OTHER SURFACE VARIATIONS UPON OPENING. OPEN TRENCHES AND EXCAVATIONS WITHIN THE CONSTRUCTION AREA(S) MUST BE PROMINENTLY MARKED.

C. CONSTRUCTION MAY BE PERMITTED IN THE RUNWAY OBJECT FREE AREA, BUT EQUIPMENT MUST BE REMOVED FROM THE ROFA WHEN NOT IN USE AND MATERIAL SHOULD NOT BE STOCKPILED WITHIN THE ROFA. UNLIKE THE ROFA, NO CONSTRUCTION MAY TAKE PLACE WITHIN THE OBJECT FREE AREA OF AN OPEN TAXIWAY, UNLESS 1) THE TOFA DIMENSION IS TEMPORARILY ADJUSTED FOR USE BY SMALLER AIRCRAFT ONLY; 2) TEMPORARY OFFSET TAXIWAY MARKINGS ARE USED; OR 3) CONSTRUCTION PROCEEDS WITH THE FOLLOWING RESTRICTIONS: APPROPRIATE NOTICES TO AIRMEN (NOTAM'S) HAVE BEEN ISSUED BY THE AIRPORT, BARRICADING AND LIGHTING PROVISIONS HAVE BEEN IMPLEMENTED BY THE CONTRACTOR, AND FLAGGERS AND WINGWALKERS ARE UTILIZED TO MAINTAIN A FIVE-FOOT SEPARATION BETWEEN AIRCRAFT AND ALL EQUIPMENT OR MATERIALS. ANY ADJUSTMENT OF RSA OR TSA DIMENSIONS SHALL BE COORDINATED WITH THE ATCT AND/OR APPROPRIATE FAA REGIONAL/ADO OFFICE.

D. PERSONNEL, MATERIAL, AND/OR EQUIPMENT MAY NOT PENETRATE THE RUNWAY OBSTACLE FREE ZONE (OFZ) OR THRESHOLD SIGHTING SURFACES WHILE THE RUNWAY IS OPEN. RUNWAY APPROACH/DEPARTURE AREAS AND CLEARWAYS MUST BE PROTECTED.

E. BLASTING OPERATIONS: N/A.

OTHER LIMITATIONS ON CONSTRUCTION:
A. THE FOLLOWING ARE PROHIBITED FROM USE ON THE AIRFIELD: TALL EQUIPMENT BEYOND THE MAXIMUM EQUIPMENT HEIGHT SHOWN ON THE SAFETY/PHASING PLAN, OPEN-FLAME WELDING/TORCH CUTTING (UNLESS PROPER PRECAUTIONS ARE TAKEN AND AIRPORT APPROVAL IS OBTAINED), ELECTRICAL BLASTING CAPS (WITHIN 1,000' OF AIRPORT PROPERTY), AND FLARE POTS.

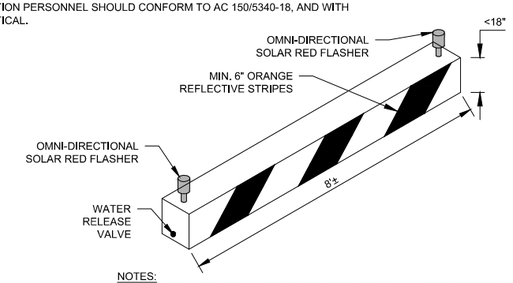
SAFETY PLAN COMPLIANCE DOCUMENT:
THE CONTRACTOR SHALL PREPARE A SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) DESCRIBING HOW THE REQUIREMENTS OF THE CONSTRUCTION SAFETY AND PHASING PLAN WILL BE MET. THE SPCD SHALL INCLUDE A CERTIFICATION STATEMENT BY THE CONTRACTOR THAT: 1) INDICATES FULL UNDERSTANDING OF THE OPERATIONAL SAFETY REQUIREMENTS OF THE CONSTRUCTION SAFETY AND PHASING PLAN AND 2) ASSERTS NO DEVIATIONS SHALL BE MADE FROM THE APPROVED SAFETY PHASING PLAN AND SPCD UNLESS WRITTEN APPROVAL IS GRANTED BY THE AIRPORT OPERATOR. THE SPCD SHALL FOLLOW THE FORMAT OF FAA AC 150/5370-2F, SECTION 204(b) AND SHALL ADDRESS ITEMS (1)-(18) PER THE REQUIREMENTS OF THE AC.

THE CONTRACTOR SHALL SUBMIT THE SPCD TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL BY THE AIRPORT SPONSOR FOURTEEN (14) DAYS PRIOR TO THE ANTICIPATED ISSUE OF THE NOTICE TO PROCEED. COPIES OF THE APPROVED CONSTRUCTION SAFETY PHASING PLAN AND SAFETY PLAN COMPLIANCE DOCUMENT SHALL BE MAINTAINED AT THE PROJECT SITE.

OTHER CONSTRUCTION NOTES:
A. CRITICAL AIRCRAFT DURING CONSTRUCTION OPERATIONS CONSIST OF DESIGN GROUP III AIRCRAFT.

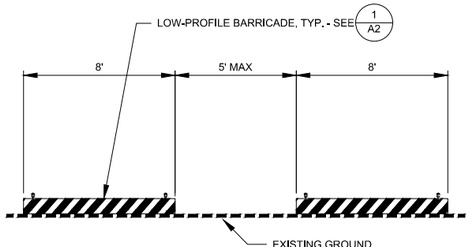
B. CONSTRUCTION IS ANTICIPATED TO BEGIN IN AUGUST, 2018.

D. ALL SAFETY AND SECURITY ITEMS REQUIRED ON THE SAFETY PHASING PLAN OR IN CONSTRUCTION AND SAFETY NOTES WILL BE INCLUDED IN THE COST FOR MOBILIZATION UNLESS OTHERWISE STATED.



NOTES:
1. MAINTENANCE OF LOW-PROFILE BARRICADES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR THE DURATION OF THE PROJECT.
2. GAPS IN BARRICADES SHALL NOT EXCEED 5-FEET.

LOW-PROFILE BARRICADE DETAIL — 1/A2
SCALE: NTS



LOW-PROFILE BARRICADE LAYOUT DETAIL — 2/A2
SCALE: NTS

Mead & Hunt
2605 Port Lansing Road
Lansing, MI 48906
phone: 517-321-8334
meadhunt.com

STATE OF MICHIGAN
JEFFREY E. THOMAN
ENGINEER
NO. 57463
LICENSED PROFESSIONAL ENGINEER

W.K. KELLOGG AIRPORT
WEST SIDE MASS GRADING - PHASE II

15551 SOUTH AIRPORT ROAD
BATTLE CREEK, MI 49015

ISSUED
07.06.18 ISSUED FOR BID

M&H NO.: 0228800-180295.01
DATE: JULY 06, 2018
DESIGNED BY: JET
DRAWN BY: JET
CHECKED BY: JET
DO NOT SCALE DRAWINGS

SHEET CONTENTS
AIRPORT CONSTRUCTION SAFETY PHASING NOTES

SHEET NO.
A2

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EARTHWORK BALANCE - AREA 1*				
PAY ITEM	MATERIAL DESCRIPTION	EXCAVATION (CYD)	EMBANKMENT (CYD)	ITEM QUANTITY (CYD)
UNCLASSIFIED EXCAVATION	ON-SITE EXCAVATION AND EMBANKMENT	-	-	-
	SHRINKAGE AND LOSS (5%)	-	-	
BORROW PLACEMENT	OFF-SITE EMBANKMENT (CIP)	-	93,483	93,483

* AREA 1 IS SCHEDULED TO BE PARTIALLY FILLED WITH MATERIAL GENERATED FROM THE TAXIWAY C PROJECT JULY 2018 - AUGUST 2018. AT THE TIME OF CONSTRUCTION, ACTUAL EXISTING SURFACE MAY VARY FROM SHOWN.

NOTES:

1. STRIP TOPSOIL PRIOR TO EXCAVATION OR EMBANKMENT. AFTER GRADING, A UNIFORM LAYER OF EXISTING TOPSOIL SHALL BE SPREAD OVER THE EXPOSED SITE WITH A THICKNESS OF NOT MORE THAN 12". TOPSOIL HANDLING IS INCLUDED IN *TOPSOIL STRIPPING AND RESTORATION.*
2. THE CONTRACTOR SHALL CLEAR AND GRUB ALL WOODED AREAS INSIDE THE PROJECT GRADING LIMITS. CLEARING AND GRUBBING IS INCIDENTAL TO *TOPSOILING STRIPPING AND RESTORATION.*
3. THE CONTRACTOR SHALL PROTECT ALL AIRPORT INFRASTRUCTURE NOT LABELED FOR REMOVAL. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE SATISFACTION OF THE AIRPORT AT NO COST TO THE OWNER.
4. SILT FENCE SHALL BE INSTALLED AROUND THE PERIMETER OF THE GRADING LIMITS WHERE GRADES CONTINUE DOWNWARD AND ACROSS THE PROJECT SITE IN TWO LOCATIONS SHOWN TO DIFFUSE OVERLAND FLOW.

EARTHWORK BALANCE - AREA 2				
PAY ITEM	MATERIAL DESCRIPTION	EXCAVATION (CYD)	EMBANKMENT (CYD)	ITEM QUANTITY (CYD)
UNCLASSIFIED EXCAVATION	ON-SITE EXCAVATION AND EMBANKMENT	4,111	3,905	4,111
	SHRINKAGE AND LOSS (5%)	-	206	
BORROW PLACEMENT	OFF-SITE EMBANKMENT (CIP)	-	5,821	5,821

LEGEND
- PROPOSED GRAVEL ROAD
- MAJOR CONTOUR (5.0')
- MINOR CONTOUR (1.0')
- SILT FENCE
- 943.78 \ 943.78 PROPOSED/EXISTING GRADE

0 60 120

GRAVEL ACCESS ROAD

LIMIT OF SURVEYED AREA

RUNWAY 5L-23R

Mead & Hunt
2605 Port Lansing Road
Lansing, MI 48906
phone: 517-321-8334
meadhunt.com

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SHEET CONTENTS
AIRPORT GRADING PLAN - AREAS 1 & 2

SHEET NO.
A3

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EARTHWORK BALANCE - AREA 3				
PAY ITEM	MATERIAL DESCRIPTION	EXCAVATION (CYD)	EMBANKMENT (CYD)	ITEM QUANTITY (CYD)
UNCLASSIFIED EXCAVATION	ON-SITE EXCAVATION AND EMBANKMENT	-	-	-
	SHRINKAGE AND LOSS (5%)	-	-	
BORROW PLACEMENT	OFF-SITE EMBANKMENT (CIP)	-	70,938	70,938
RECYCLED CONCRETE AGGREGATE BASE COURSE	OFF-SITE GRAVEL	-	818	818

NOTES:

1. STRIP TOPSOIL PRIOR TO EXCAVATION OR EMBANKMENT. AFTER GRADING, A UNIFORM LAYER OF EXISTING TOPSOIL SHALL BE SPREAD OVER THE EXPOSED SITE WITH A THICKNESS OF NOT MORE THAN 12". TOPSOIL HANDLING IS INCLUDED IN *TOPSOIL STRIPPING AND RESTORATION.*
2. THE CONTRACTOR SHALL CLEAR AND GRUB ALL WOODED AREAS INSIDE THE PROJECT GRADING LIMITS. CLEARING AND GRUBBING IS INCIDENTAL TO *TOPSOILING STRIPPING AND RESTORATION.*
3. THE CONTRACTOR SHALL REMOVE ASPHALT PAVED ACCESS ROAD THAT CONNECTS TO TAXIWAY D WITHIN THE GRADING LIMITS (APPROXIMATELY 350'). THE PAVEMENT SHALL BE SAWCUT AT THE LIMITS OF REMOVAL IN ACCORDANCE WITH P-101. SAWCUTTING SHALL BE INCIDENTAL TO *ASPHALT PAVEMENT REMOVAL.*
4. PROPOSED GRAVEL PERIMETER ROAD SHALL CONSIST OF 8" X 20' OF P-219.
5. THE CONTRACTOR SHALL PROTECT ALL AIRPORT INFRASTRUCTURE NOT LABELED FOR REMOVAL. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE SATISFACTION OF THE AIRPORT AT NO COST TO THE OWNER.
6. SILT FENCE SHALL BE INSTALLED AROUND THE PERIMETER OF THE GRADING LIMITS WHERE GRADES CONTINUE DOWNWARD AND ACROSS THE PROJECT SITE IN TWO LOCATIONS SHOWN TO DIFFUSE OVERLAND FLOW.

GRADING LIMIT STA: 25+45.35 OFF: -1150.00'
GRADING LIMIT STA: 32+23.17 OFF: -1150.00'
GRADING LIMIT STA: 25+65.84 OFF: -1063.51'
GRADING LIMIT STA: 26+06.50 OFF: -1008.60'
GRADING LIMIT STA: 27+37.02 OFF: -983.85'
GRADING LIMIT STA: 31+81.34 OFF: -934.06'
GRADING LIMIT STA: 28+43.28 OFF: -924.63'
GRADING LIMIT STA: 29+90.50 OFF: -881.78'
GRADING LIMIT STA: 32+02.99 OFF: -793.90'
PERIMETER ROAD STA: 32+52.88 OFF: -796.05'
GRADING LIMIT STA: 29+93.86 OFF: -763.96'
PERIMETER ROAD STA: 32+59.35 OFF: -776.92'
PERIMETER ROAD STA: 30+22.40 OFF: -752.60'
PERIMETER ROAD STA: 30+11.30 OFF: -730.15'
GRADING LIMIT STA: 27+74.11 OFF: -642.36'
GRADING LIMIT STA: 25+73.23 OFF: -622.52'
GRADING LIMIT STA: 35+22.66 OFF: -785.69'
GRADING LIMIT STA: 36+78.14 OFF: -700.07'
GRADING LIMIT STA: 37+97.54 OFF: -593.96'
GRADING LIMIT STA: 39+23.98 OFF: -645.20'
GRADING LIMIT STA: 39+81.67 OFF: -593.55'
PERIMETER ROAD STA: 25+66.80 OFF: -429.38'
PERIMETER ROAD STA: 25+62.97 OFF: -409.37'
PERIMETER ROAD STA: 39+79.05 OFF: -431.10'
PERIMETER ROAD STA: 39+77.71 OFF: -411.10'
GRADING LIMIT STA: 26+07.35 OFF: -270.04'
GRADING LIMIT STA: 28+71.72 OFF: -250.00'
GRADING LIMIT STA: 39+44.30 OFF: -250.00'
6" UNDERDRAIN, DRAIN TO TAXIWAY D
CONNECT PROPOSED UD TO EXISTING UD ALONG TAXIWAY EDGE.
PROTECT EXISTING SIGNS
PROPOSED SILT FENCE (TYP)
GRAVEL ACCESS ROAD
AREA 3
RUNWAY 5L-23R
1:6 SLOPE

LEGEND
PROPOSED GRAVEL ROAD
MAJOR CONTOUR (5.0')
MINOR CONTOUR (1.0')
SILT FENCE
943.78 \ 943.78 PROPOSED/EXISTING GRADE

0 60 120

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STATE OF MICHIGAN
JEFFREY E. THOMAN
ENGINEER
NO. 57463
LICENSED PROFESSIONAL ENGINEER

W.K. KELLOGG AIRPORT
WEST SIDE MASS GRADING - PHASE II

15551 SOUTH AIRPORT ROAD
BATTLE CREEK, MI 49015

ISSUED
07.06.18 ISSUED FOR BID

M&H NO.: 0228800-1180295.01
DATE: JULY 06, 2018
DESIGNED BY: BAJ
DRAWN BY: JET
CHECKED BY: JET
DO NOT SCALE DRAWINGS

SHEET CONTENTS
AIRPORT GRADING PLAN - 2

SHEET NO.
A4

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