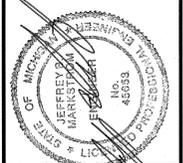


# CONSTRUCTION PLANS FOR THE CITY OF MOUNT PLEASANT

## PLANS OF PROPOSED ISLAND PARK IMPROVEMENTS

T14N - R4W, SECTION 15 CITY OF MOUNT PLEASANT  
ISABELLA COUNTY, MICHIGAN



PLAN DATE: MAY, 2015  
 PROJECT MGR: SMC  
 REVIEWER: JBM  
 SCALE: NO SCALE

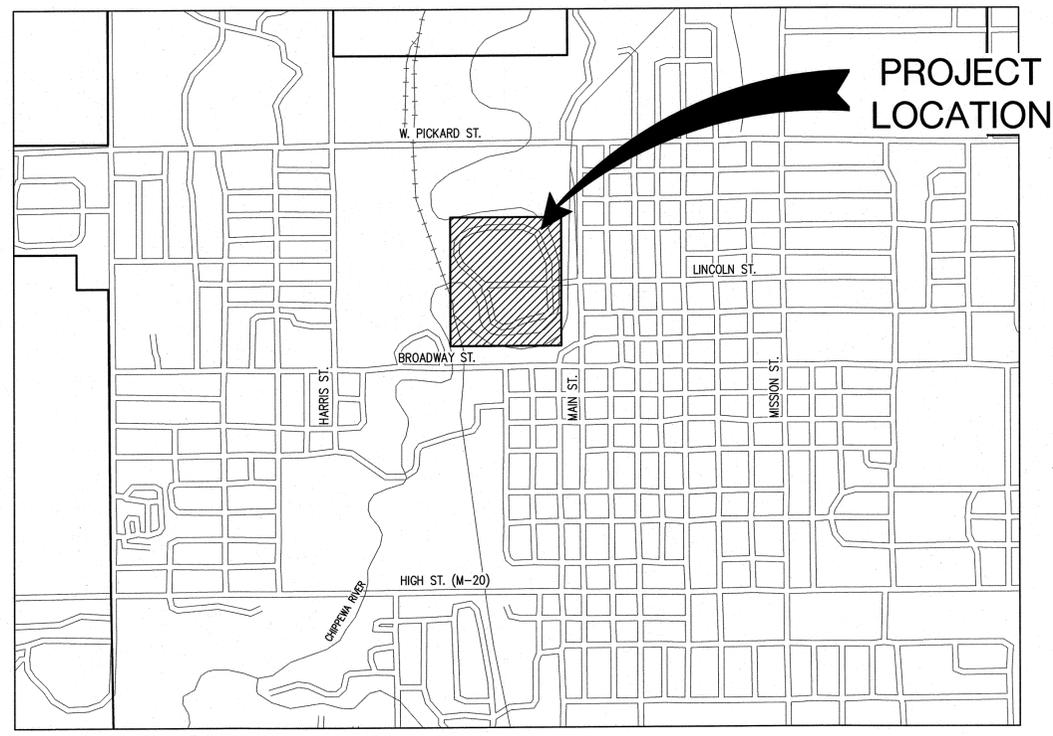
**ROWE PROFESSIONAL SERVICES COMPANY**  
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PREPARED FOR  
**CITY OF MT. PLEASANT**  
**ISLAND PARK IMPROVEMENTS**  
 COVER SHEET

REV:  
 SHT# 1 OF 4  
 JOB No: 15M0030

**PROJECT DESCRIPTION**  
 THIS PROJECT INCLUDES THE CONSTRUCTION OF SIDEWALK, AND A CONCRETE PATIO WITH TWO ALTERNATES INCLUDING THE CONSTRUCTION OF:  
 • ADDITIONAL SIDEWALK (ALTERNATE #1)  
 • 4 CONCRETE PADS FOR FUTURE PAVILIONS (ALTERNATE #2)

**SHEET INDEX**  
 1 COVER SHEET  
 2 NOTE AND DETAIL SHEET  
 3 PLAN SHEET  
 4 SESC LEGEND SHEET



**LOCATION MAP**  
 NOT TO SCALE

**OWNER INFORMATION**  
 CITY OF MT. PLEASANT  
 320 W. BROADWAY STREET  
 MT. PLEASANT, MI 48858

**PLAN SUBMITTAL LOG**

AGENCY	UTILITY	SUBMITTAL DATE
1. CITY OF MOUNT PLEASANT DIVISION OF PUBLIC WORKS 1303 N. FRANKLIN STREET MOUNT PLEASANT, MI 48858 (989) 779-5328 STACIE TEWARI, P.E.	WATERMAIN, SANITARY AND STORM SEWER	5/8/2015
2. MDEQ-LWMD 401 KETCHUM ST. SUITE B BAY CITY, MI 48708 (989) 894-6226 JOY BROOKS	FLOODPLAIN	5/8/2015



REVISIONS		
NO.	DATE	DESCRIPTION

**GENERAL CONSTRUCTION NOTES**

**EMERGENCY CONTACTS**

BEFORE BEGINNING WORK ON THE PROJECT, THE CONTRACTOR SHALL PROVIDE THE OWNER AND ENGINEER WITH THE NAMES AND TELEPHONE NUMBERS OF EMERGENCY CONTACTS. AT LEAST ONE PERSON REPRESENTING THE CONTRACTOR SHALL BE AVAILABLE TO RESPOND TO EMERGENCIES THROUGHOUT THE LIFE OF THE PROJECT, 24 HOURS A DAY, 7 DAYS A WEEK.

**UNDERGROUND UTILITY IDENTIFICATION AND LOCATION**

THE CONTRACTOR SHALL CALL MISS DIG (1-800-482-7171 OR 811) A MINIMUM OF THREE WORK DAYS IN ADVANCE OF BEGINNING EXCAVATION. THE CONTRACTOR IS RESPONSIBLE TO IDENTIFY AND NOTIFY UTILITY AGENCIES WITHIN THE PROJECT AREA WHICH DO NOT PARTICIPATE IN THE MISS DIG NOTIFICATION PROGRAM.

**PUBLIC UTILITIES**

EXISTING UTILITIES ARE SHOWN BASED UPON RECORDS AND LOCATIONS PROVIDED BY UTILITY AGENCIES. THE INFORMATION SHOWN IS CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR. UNLESS THE PLANS SPECIFICALLY SHOW THAT EXISTING UTILITIES ARE TO BE MOVED, THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN EXISTING UTILITIES.

**VERIFICATION OF UNDERGROUND UTILITIES**

THE CONTRACTOR SHALL EXCAVATE AND LOCATE ALL EXISTING UTILITIES IN THE PROJECT AREA IN ADVANCE OF CONSTRUCTION TO VERIFY THEIR ACTUAL LOCATION. POTENTIAL CONFLICTS SHALL BE REPORTED TO THE ENGINEER. THE CONTRACTOR SHALL MAKE SUCH CHANGES TO GRADE AND ALIGNMENT OF PROPOSED WORK AS DIRECTED BY THE ENGINEER TO AVOID CONFLICTS, AT NO INCREASE IN COST TO THE OWNER.

**UTILITY SERVICE**

UNLESS SPECIFICALLY PROVIDED OTHERWISE IN THE CONTRACT DOCUMENTS, ALL EXISTING UTILITIES ARE TO REMAIN IN SERVICE DURING THE PROJECT.

**MAILBOXES**

MAILBOXES LOCATED WITHIN THE LIMITS OF EXCAVATION, GRADING, OR CONSTRUCTION SHALL BE REMOVED AND PROTECTED FROM DAMAGE BY THE CONTRACTOR. TEMPORARY MAILBOXES SHALL BE PROVIDED AND MAINTAINED DURING THE PROJECT. UPON COMPLETION OF GRADING OR CONSTRUCTION ACTIVITIES, THE ORIGINAL MAILBOX SHALL BE REINSTALLED.

MAILBOXES (AND/OR SUPPORTS) WHICH ARE DAMAGED AS A RESULT OF THE PROJECT SHALL BE REPLACED BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE. MAILBOXES SHALL BE REPLACED IN ACCORDANCE WITH THE STANDARDS OF THE U.S. POSTAL SERVICE AND THE REGULATIONS OF THE AGENCY HAVING JURISDICTION OVER THE ROADS AND STREETS IN THE PROJECT AREA.

**PRIVATE IRRIGATION SYSTEMS**

WHERE IRRIGATION SYSTEMS WITHIN THE PUBLIC RIGHT-OF-WAY WILL INTERFERE WITH THE PROPOSED CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNERS THAT IT IS THEIR RESPONSIBILITY TO REMOVE AND PROTECT THEIR IRRIGATION SYSTEM. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COPY OF THE NOTIFICATION.

WHERE THE OWNER HAS NOT REMOVED THEIR PRIVATE IRRIGATION SYSTEM, THE CONTRACTOR SHALL CUT AND PLUG THOSE SECTIONS OF PIPING WHICH INTERFERE WITH CONSTRUCTION, SPRINKLER HEADS, VALVES, AND PIPING WHICH INTERFERES WITH THE CONTRACTOR'S WORK, SHALL BE REMOVED AND STOCKPILED ON THE OWNER'S PROPERTY.

**SOIL BORINGS / PAVEMENT CORES**

IF PROVIDED ON THE PLANS OR IN THE CONTRACT DOCUMENTS, LOGS OF SOIL BORINGS OR PAVEMENT CORES REPRESENT THE SUBSURFACE CONDITIONS ENCOUNTERED AT SPECIFIC POINTS. THE INFORMATION IS PROVIDED FOR THE CONTRACTOR'S INFORMATION ONLY.

**MAINTAINING TRAFFIC**

LOCAL AND EMERGENCY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES WITHIN THE PROJECT AREA.

WHEN EXCAVATION, FRESH CONCRETE, OR OTHER CONSTRUCTION WORK WILL RESULT IN THE CLOSURE OF A STREET OR DRIVEWAY FOR A PERIOD OF TIME, THE CONTRACTOR IS RESPONSIBLE TO NOTIFY ALL AFFECTED RESIDENTS AND BUSINESSES IN ADVANCE.

THE CONTRACTOR SHALL NOTIFY EMERGENCY RESPONSE AGENCIES IN ADVANCE OF ROAD CLOSURES OR THE ESTABLISHMENT OF DETOURS.

**TRAFFIC SIGNS**

TRAFFIC SIGNS WHICH INTERFERE WITH CONSTRUCTION SHALL BE REMOVED AND REPLACED BY THE AGENCY HAVING JURISDICTION OVER THE STREETS OR ROADS IN THE PROJECT AREA. THE CONTRACTOR IS RESPONSIBLE TO CONTACT THE AGENCY TO ARRANGE FOR REMOVAL OF THE SIGN AND IS RESPONSIBLE TO PAY ANY FEES ASSOCIATED WITH THE REMOVAL AND REPLACEMENT OF THE SIGNS.

**SCHEDULE**

THE CONTRACTOR SHALL COMPLETE ALL WORK IN AN EXPEDITIOUS MANNER AND SHALL NOT STOP WORK ON THE PROJECT ONCE BEGUN.

**ALIGNMENT**

ALIGNMENT AND GRADES FOR CURB AND GUTTER (INCLUDING THROUGH RAMPS AND DRIVEWAY OPENINGS) SHOWN ON THE PLANS ARE FOR THE TOP, BACK OF CURB, UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE PLANS.

THE HORIZONTAL ALIGNMENT SHOWN ON THE DRAWINGS FOR DRAINAGE STRUCTURES WHICH ARE NOT IN THE CURB LINE AND FOR MANHOLES IS TO THE CENTER OF THE STRUCTURE.

WHERE RIM ELEVATIONS ARE PROVIDED ON THE PLANS FOR MANHOLE CASTINGS, THE ELEVATION PROVIDED IS FOR THE TOP OF THE CASTING.

WHERE RIM ELEVATIONS ARE PROVIDED ON THE PLANS FOR INLETS OR MANHOLE CASTINGS, THE ELEVATIONS PROVIDED ARE CONSIDERED PRELIMINARY. THE CONTRACTOR SHALL MAKE THE FINAL ADJUSTMENT FOLLOWING THE ESTABLISHMENT OF ACTUAL GRADING AND PAVEMENT ELEVATIONS.

**CONSTRUCTION STAKING**

WHEN CONSTRUCTION STAKING IS TO BE PROVIDED BY THE ENGINEER OR OWNER, THE CONTRACTOR SHALL REQUEST STAKING AT LEAST THREE WORKING DAYS IN ADVANCE.

WHEN CONSTRUCTION STAKING IS TO BE PROVIDED BY THE ENGINEER OR OWNER, STAKING WILL BE PROVIDED ONE TIME. THE CONTRACTOR SHALL PROTECT AND PRESERVE SURVEY CONTROL AND STAKING. RE-STAKING WILL BE AT THE CONTRACTOR'S EXPENSE.

**SURVEY CORNERS, BENCHMARKS, AND CONTROL POINTS**

THE CONTRACTOR SHALL PRESERVE ALL GOVERNMENT CORNERS, PROPERTY CORNERS, BENCHMARKS, SURVEY CONTROL POINTS AND OTHER SURVEY POINTS WITHIN THE PROJECT AREA. WHERE CORNERS, BENCHMARKS, OR SURVEY POINTS ARE ENCOUNTERED WHICH WILL BE DISTURBED BY THE CONTRACTOR'S ACTIVITIES; A LICENSED SURVEYOR SHALL WITNESS THE POINT BEFORE DISTURBANCE AND SHALL RE-SET THE POINT FOLLOWING THE COMPLETION OF CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL PAY THE SURVEYOR TO WITNESS AND TO RE-SET THE POINTS.

**PROTECTION OF TREES, SHRUBS, AND LANDSCAPING**

ALL TREES, SHRUBS, AND LANDSCAPING WITHIN THE CONSTRUCTION AREA WHICH ARE NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. DAMAGED TREES, SHRUBS, AND LANDSCAPING SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

**CONSTRUCTION SIGNING AND BARRICADING**

THE CONTRACTOR SHALL PROTECT HAZARDOUS AREAS WITH BARRICADES. BARRICADES LEFT IN PLACE AFTER SUNSET SHALL BE LIGHTED.

THE CONTRACTOR SHALL PROVIDE SUITABLE SANDBAGS OR OTHER SUITABLE MEASURES FOR ANCHORING OF TEMPORARY SIGNS AND BARRICADES, TO PREVENT THEIR TIPPING OR DISPLACEMENT BY WIND OR AIR FLOW FROM VEHICLES.

THE CONTRACTOR SHALL PROVIDE SIGNING, BARRICADES, FLAGGERS, CONES, AND OTHER TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCY HAVING JURISDICTION OVER STREETS OR ROADS IN THE PROJECT AREA, THE CURRENT MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND THE PLANS AND SPECIFICATIONS.

THE CONTRACTOR SHALL COVER OR REMOVE TEMPORARY SIGNS DURING PERIODS WHEN THEY ARE NOT APPROPRIATE.

**TURF ESTABLISHMENT (BY THE CITY)**

ALL DISTURBED AREAS WHICH ARE NOT TO BE SURFACED WITH PAVEMENT, AGGREGATE OR OTHER APPROVED SURFACES SHALL BE ESTABLISHED WITH TURF.

TURF AREAS SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE.

DISTURBED AREAS SHALL BE SURFACED WITH FOUR INCHES OF SCREENED TOPSOIL.

THE CONTRACTOR IS RESPONSIBLE TO ESTABLISH TURF WHICH IS SUBSTANTIALLY FREE OF BARE SPOTS AND FREE OF WEEDS. THE GROUND SURFACE IN TURF AREAS SHALL BE SMOOTH AND PROVIDE A NATURAL TRANSITION TO ADJACENT, UNDISTURBED AREAS.

THE CONTRACTOR IS RESPONSIBLE TO PROVIDE WATERING, WEEDING, RESEEDING, AND REWORKING AS NECESSARY TO ESTABLISH TURF AREAS TO THE REQUIRED STANDARD.

**ADA COMPLIANCE**

ALL PROPOSED CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA), AND APPLICABLE GUIDELINES OR STANDARDS. WHERE EXISTING CONDITIONS AND/OR THE REQUIREMENTS OF THE PLANS WILL RESULT IN FINISHED CONDITIONS THAT DO NOT MEET THE ADA REQUIREMENTS, GUIDELINES, OR STANDARDS; THE CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE TO REMOVE AND REPLACE WORK DETERMINED TO BE NOT IN ACCORDANCE WITH APPLICABLE REQUIREMENTS, GUIDELINES, OR STANDARDS.

**EARTHWORK**

THE CONTRACTOR SHALL MAKE HIS OWN DETERMINATION OF THE EARTHWORK QUANTITIES, AND BASE HIS BID ON HIS DETERMINATION OF THE QUANTITIES OF WORK REQUIRED.

IF ADDITIONAL FILL MATERIAL MUST BE PROVIDED TO ATTAIN THE FINISH GRADES SHOWN ON THE PLANS, THE CONTRACTOR SHALL PROVIDE THE REQUIRED FILL MATERIAL, UNLESS A SPECIFIC BORROW AREA IS IDENTIFIED ON THE PLANS.

EXCESS SOILS RESULTING FROM EXCAVATION AND EARTHWORK SHALL BECOME THE CONTRACTOR'S PROPERTY AND DISPOSED OF PROPERLY, UNLESS AN AREA(S) HAS BEEN DESIGNATED FOR STOCKPILING OR "BLENDING IN" THE EXCESS MATERIAL WITHIN THE PROJECT LIMITS.

**BACKFILL AND EMBANKMENT**

BACKFILL OF AN EXCAVATION UNDER OR WITHIN THE ONE ON ONE INFLUENCE OF AN EXISTING OR PROPOSED ROAD, SIDEWALK, DRIVEWAY, PAVEMENT, OR AGGREGATE SURFACE, SHALL BE SAND, MEETING THE REQUIREMENTS OF GRANULAR MATERIAL CLASS III AS DESCRIBED IN THE CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION. THE SAND BACKFILL SHALL BE COMPACTED TO AT LEAST 95% OF ITS MAXIMUM UNIT WEIGHT.

BACKFILL OF AN EXCAVATION WHICH IS NOT UNDER OR WITHIN THE ONE ON ONE INFLUENCE OF AN EXISTING OR PROPOSED ROAD, SIDEWALK, DRIVEWAY, PAVEMENT, OR AGGREGATE SURFACE MAY BE SUITABLE EXCAVATED MATERIAL OR OTHER SOIL, WHICH IS FREE OF ORGANIC MATTER, STONES AND ROCKS, ROOTS, BROKEN CONCRETE, FROZEN MATERIAL, OR DEBRIS. THE BACKFILL SHALL BE COMPACTED TO AT LEAST 90% OF ITS MAXIMUM UNIT WEIGHT.

THE CONTRACTOR SHALL INDICATE THE SOURCE OF SAND USED FOR BACKFILL TO THE ENGINEER, AND PROVIDE THE ENGINEER WITH THE RESULTS OF A GRADATION TEST PERFORMED ON A SAMPLE OF THE SAND. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF USING SAND FROM OTHER SOURCES.

EMBANKMENT USED TO BUILD THE SUBGRADE TO REQUIRED ELEVATION SHALL BE SUITABLE SOIL EXCAVATED FROM THE PROJECT SITE, OR FURNISHED BY THE CONTRACTOR FROM OTHER SOURCES. SUITABLE SOIL IS FREE FROM ORGANIC MATTER, ROCKS AND STONES, FROZEN MATERIAL, BROKEN CONCRETE, AND DEBRIS.

EMBANKMENT CONSTRUCTED OF GRANULAR SOILS SHALL BE COMPACTED IN LIFTS NOT EXCEEDING 10 INCHES TO AT LEAST 95% OF ITS MAXIMUM UNIT WEIGHT.

EMBANKMENT CONSTRUCTED OF COHESIVE SOILS SHALL BE COMPACTED IN LIFTS NOT EXCEEDING 10 INCHES TO AT LEAST 95% OF ITS MAXIMUM UNIT WEIGHT.

**DENSITY TESTING**

THE MAXIMUM UNIT WEIGHT OF SAND AND OTHER GRANULAR SOILS WILL BE DETERMINED BY THE ONE POINT CONE TEST, AS DESCRIBED IN THE MICHIGAN DEPARTMENT OF TRANSPORTATION'S DENSITY CONTROL HANDBOOK, EXCEPT WHEN ANOTHER TEST METHOD IS SPECIFIED.

THE MAXIMUM UNIT WEIGHT OF COHESIVE SOILS WILL BE DETERMINED BY THE ONE POINT PROCTOR TEST, AS DESCRIBED IN THE MICHIGAN DEPARTMENT OF TRANSPORTATION'S DENSITY CONTROL HANDBOOK, EXCEPT WHEN ANOTHER TEST METHOD IS SPECIFIED.

**DRAINAGE**

THE CONTRACTOR SHALL MAINTAIN DRAINAGE OF THE PROJECT AREA AND ADJACENT AREAS. WHERE EXISTING DRAINAGE FACILITIES ARE DISTURBED OR BLOCKED BY CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY PROVISIONS FOR DRAINAGE.

WHERE CONSTRUCTION HAS DISTURBED EXISTING DITCHES, SWALES, OR OTHER DRAINAGE FACILITIES; THE CONTRACTOR SHALL RESTORE THEM TO THEIR GRADES AND DIMENSIONS WHICH EXISTED PRIOR TO THE BEGINNING OF CONSTRUCTION, UNLESS DIRECTED OTHERWISE.

DRAINAGE SHALL NOT BE REROUTED ONTO ADJACENT PROPERTIES NOR ALLOWED TO DRAIN ONTO ADJACENT PROPERTIES AT AN INCREASED RATE, AS A RESULT OF THE CONTRACTOR'S WORK.

**SIDEWALK CONSTRUCTION**

SIDEWALKS SHALL BE CONSTRUCTED TO PROVIDE POSITIVE DRAINAGE OF THE SIDEWALK AND ADJACENT SURFACES.

EXCEPT WHERE NECESSARY TO PROVIDE POSITIVE DRAINAGE OR MEET EXISTING SURFACES, SIDEWALK SHALL BE CONSTRUCTED WITH A CROSS SLOPE SLOPED TOWARD THE STREET.

SIDEWALK CROSS SLOPES SHALL NOT EXCEED 2%.

IN TURF AREAS, THE SURFACE OF THE SIDEWALK SHALL BE ABOUT 1/4 INCH HIGHER THAN THE ADJACENT GROUND SURFACES, EXCEPT WHERE NECESSARY TO PROVIDE POSITIVE DRAINAGE OR MEET EXISTING SIDEWALKS, CURBS, OR PAVEMENTS.

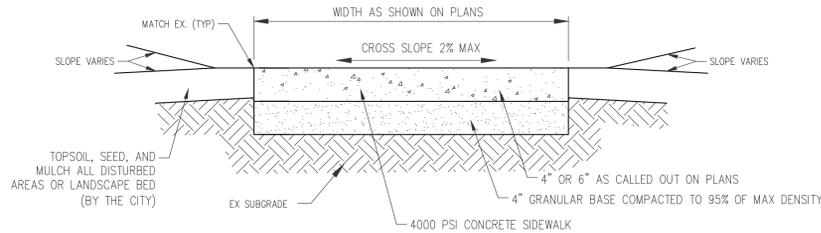
SIDEWALK SHALL BE CONSTRUCTED ON A SAND BASE, COMPACTED TO AT LEAST 95% OF ITS MAXIMUM UNIT WEIGHT.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN SIDEWALK FORMS HAVE BEEN SET AND THE SAND BASE PREPARED. CONCRETE SHALL NOT BE PLACED UNTIL THE ENGINEER HAS OBSERVED THE FORMS. CONCRETE DELIVERY SHALL BE SCHEDULED TO ALLOW SUFFICIENT TIME FOR ADJUSTMENT OF THE FORMS, IN THE EVENT THAT ADJUSTMENT IS NECESSARY.

THE CONTRACTOR SHALL PROTECT FRESH CONCRETE FROM DAMAGE BY THE WEATHER, TRAFFIC, OR VANDALISM. DAMAGED CONCRETE SHALL BE REPLACED BY THE CONTRACTOR'S EXPENSE.

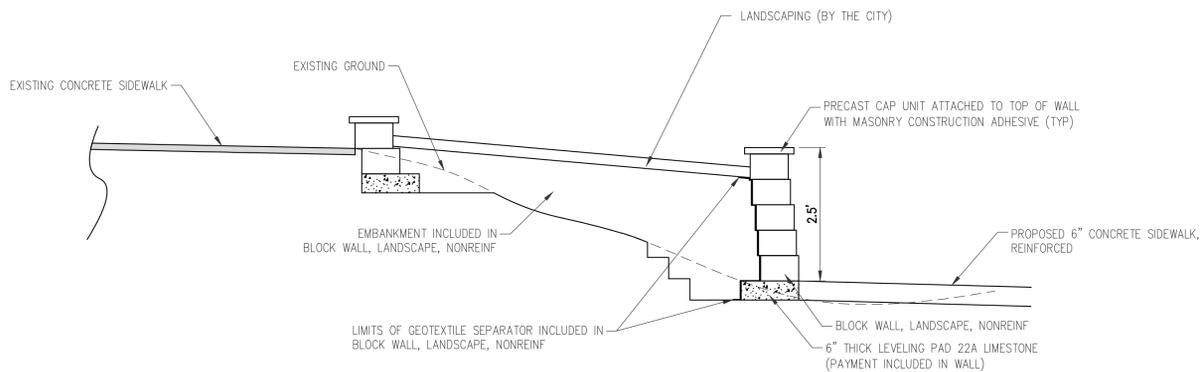
**NOTES:**

- 1) THE EXCAVATION OF THE EXISTING EARTH TO CONSTRUCT THE PROPOSED SIDEWALK CROSS SECTION SHALL BE INCLUDED IN THE COST OF THE SIDEWALK ITEM.
- 2) SLOPE MAY VARY BETWEEN 1 & 2% MAX. IN THE DIRECTION OF NATURAL FLOW OR AS APPROVED BY THE ENGINEER TO MEET EXISTING CONDITIONS.



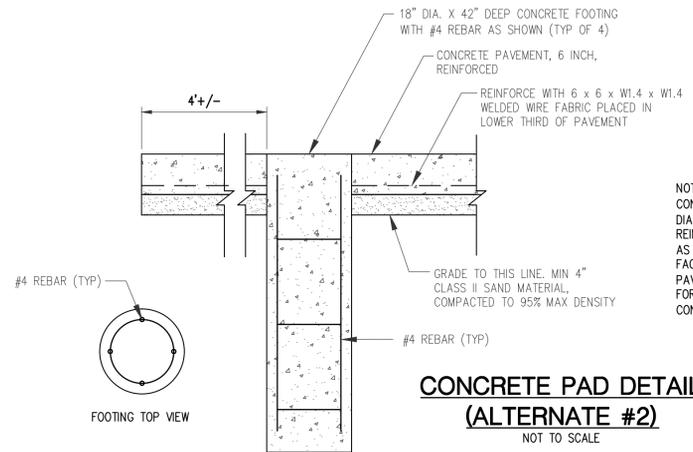
**TYPICAL CONCRETE SIDEWALK CROSS SECTION**

NOT TO SCALE



**-FUTURE-  
BLOCK RETAINING WALL DETAIL (NOT IN CONTRACT)**

NOT TO SCALE

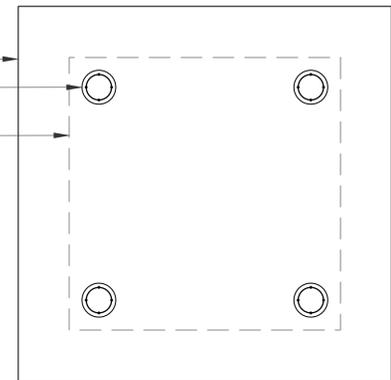


**CONCRETE PAD DETAIL  
(ALTERNATE #2)**  
NOT TO SCALE

FOOTING SECTION VIEW

FOOTING TOP VIEW

FOOTING PLAN VIEW



FOOTING PLAN VIEW

NOTE: FOR EACH CONCRETE PAD CONTRACTOR SHALL INSTALL FOUR (4) 18" DIA. X 42" DEEP FOUNDATIONS WITH STEEL REINFORCEMENT LOCATED AT EACH CORNER AS DIRECTED BY THE OWNER/ENGINEER TO FACILITATE THE INSTALLATION OF A NEW PAVILION STRUCTURE (BY OTHERS). COST FOR THE FOUNDATIONS TO BE INCLUDED IN CONCRETE ITEM (ALTERNATE #2)

PLAN DATE: MAY, 2015  
PROJECT MGR: SMC  
REVIEWER: JBM  
SCALE: NO SCALE

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PREPARED FOR  
**CITY OF MT. PLEASANT  
ISLAND PARK IMPROVEMENTS**

**NOTE AND DETAIL SHEET**



Know what's below.  
Call before you dig.

REVISIONS			
NO.	DATE	DESCRIPTION	BY
-	-	-	-

REV:  
SHT# 2 OF 4  
JOB No: 15M0030

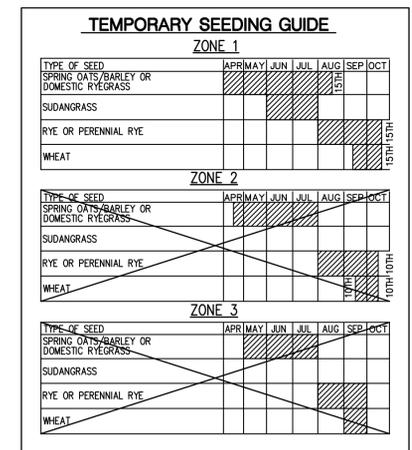
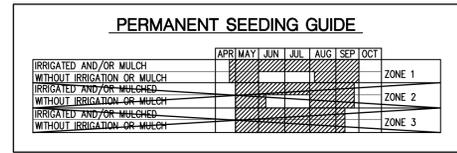
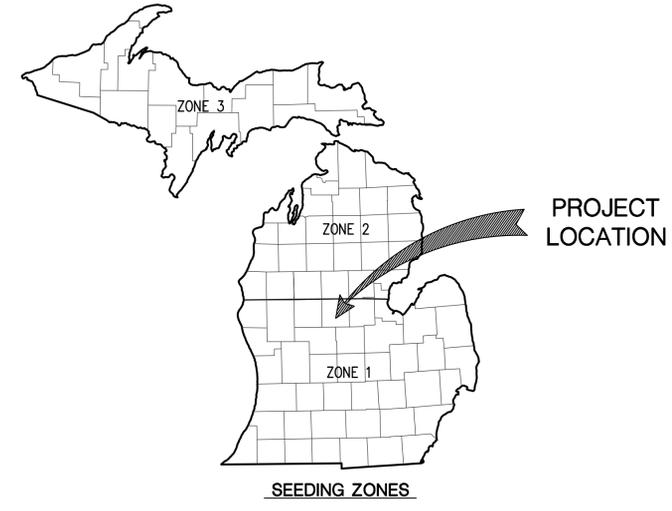


# MICHIGAN UNIFIED KEYING SYSTEM

## SOIL EROSION SEDIMENTATION CONTROL MEASURES

\* INDICATES APPLICABILITY OF A SPECIFIC CONTROL MEASURE TO ONE OR MORE OF THE SEVEN PROBLEM AREAS

KEY	DETAIL	CHARACTERISTICS	PROBLEM AREAS							KEY	DETAIL	CHARACTERISTICS	PROBLEM AREAS						
			A	B	C	D	E	F	G				A	B	C	D	E	F	G
1	STOPPING & STOCKPILING TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A DIVERSION. STOCKPILE SHOULD BE TEMPORARILY SEEDED.	*				*	*		28	DROP SPILLWAY	SLOWS VELOCITY OF FLOW, REDUCING EROSION CAPACITY		*	*				
2	SELECTIVE GRADING & SHAPING	WATER CAN BE DIVERTED TO MINIMIZE EROSION. FLATTER SLOPES EASE EROSION PROBLEMS.	*				*	*	*	29	PIPE DROP	REDUCES RUNOFF VELOCITY. REMOVES SEDIMENT AND TURBIDITY. CAN BE DESIGNED TO HANDLE LARGE VOLUMES OF FLOW.			*				
3	GRUBBING LIMITED	SAVES COST OF GRUBBING, PROVIDES NEW SPROUTS, RETAINS EXISTING ROOT MAT SYSTEM. REDUCES WIND FILL AT NEW FOREST EDGE. DISCOURAGES EQUIPMENT ENTRANCE.	*				*		*	30	PIPE SPILLWAY	REMOVES SEDIMENT AND TURBIDITY FROM RUNOFF. MAY BE PART OF PERMANENT EROSION CONTROL PLAN.			*				
4	VEGETATIVE STABILIZATION	MAY UTILIZE A VARIETY OF PLANT MATERIAL. ESTABLISHES SOIL FROM IMPACT OF FALLING AND SLOWS RUNOFF VELOCITY. REDUCES RUNOFF VOLUME. REDUCES SEDIMENT FROM RUNOFF.	*	*	*		*	*	*	31	ENERGY DISSIPATOR	SLOWS RUNOFF VELOCITY TO NON-EROSIVE LEVEL. PERMITS SEDIMENT COLLECTION FROM RUNOFF.	*		*	*			
5	SEEDING	IMPROVED AND VERY EFFECTIVE. STABILIZES SOIL. THIS MINIMIZING EROSION. PROMPTS RUNOFF TO REVEALS SOIL. REDUCING RUNOFF VOLUME. SHOULD INCLUDE PREPARED TOPSOIL BED.	*		*		*	*	*	32	LEVEL SPREADER	CONCRETE COLLECTED CHANNEL OR PIPE FLOW BACK TO SHEET FLOW. AEROS CHANNEL ELEMENTS AND CONSTRUCTION OFF PROJECT SITE. SIMPLE TO CONSTRUCT.			*				
6	SEEDING WITH MULCH AND/OR MATING	FACILITATES ESTABLISHMENT OF VEGETATIVE COVER. EFFECTIVE FOR DRAMAQUANTS WITH LOW VELOCITY. EASY TO PLACE IN SMALL QUANTITIES BY MECHANIZED PERSONNEL. SHOULD INCLUDE PREPARED TOPSOIL BED.	*		*		*	*	*	33	SEDIMENTATION TRAP	MAY BE CONSTRUCTED OF A VARIETY OF MATERIALS. TRAPS SEDIMENT AND REDUCES VELOCITY OF FLOW. CAN BE CLEANED AND EXPANDED AS NEEDED.		*	*				
7	HYDRO-SEEDING	EFFECTIVE ON LARGE AREAS. MULCH TACKING AGENT USED TO PROVIDE IMMEDIATE PROTECTION. MULCH SPREADS & BLENDS. SHOULD INCLUDE PREPARED TOPSOIL BED.	*				*	*	*	34	SEDIMENT BASIN	TRAPS SEDIMENT. RELEASES RUNOFF AT NON-EROSIVE RATES. CONCRETE RUNOFF AT SYSTEM OUTLETS. CAN BE VISUAL MONITORED.		*	*	*			
8	SODDING	PROVIDES IMMEDIATE PROTECTION. CAN BE USED ON STEEP SLOPES WHERE SEED MAY BE DIFFICULT TO ESTABLISH. EASY TO PLACE. MAY BE REPAIRED IF DAMAGED. SHOULD INCLUDE PREPARED TOPSOIL BED.	*		*		*	*	*	35	STORM SEWER	SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS. CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF. CONDUCTS RUNOFF TO MUNICIPAL SEWER SYSTEM OR STABILIZED OUTFALL LOCATION. USE CATCH BASIN TO COLLECT SEDIMENT.				*	*		
9	VEGETATIVE BUFFER STRIP	SLOWS RUNOFF VELOCITY. FILTERS SEDIMENT FROM RUNOFF. REDUCES VOLUME OF RUNOFF ON SLOPES.	*	*					*	36	CATCH BASIN, DRAIN INLET	COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF. MAY USE FILTER CLOTH OVER INLET.				*	*		
10	MULCHING	USED ALONE TO PROTECT EXPOSED AREAS FOR SHORT PERIODS. PROTECTS SOIL FROM IMPACT OF FALLING AND PREVENTS SOIL WINDBLAST AND PROTECTS GERMINATING SEED FROM TEMPERATURE EXTREMES.	*				*	*		37	SOD FILTER	RESPONSIVE AND EASY TO CONSTRUCT. PROVIDES IMMEDIATE PROTECTION. PROTECTS AREAS AROUND INLETS FROM EROSION.				*			
11	ROUGHENED SURFACE	REDUCES VELOCITY AND INCREASES INFILTRATION RATES. HELDS WATER, SEEDS, AND MULCH BETTER THAN SMOOTH SURFACES.	*				*		*	38	STRAW BALE FILTER	RESPONSIVE AND EASY TO CONSTRUCT. CAN BE LOCATED AS NECESSARY TO COLLECT SEDIMENT. MAY BE USED IN CONJUNCTION WITH SOD FILTER FOR ADDED STABILITY.				*			
12	COMPACTION	HELPS HOLD SOIL IN PLACE, MAKING EXPOSED AREAS LESS VULNERABLE TO EROSION.	*				*		*	39	ROCK FILTER	CAN UTILIZE MATERIAL FOUND ON SITE. EASY TO CONSTRUCT. FILTERS SEDIMENT FROM RUNOFF.				*			
13	RIPRAP, RUBBLE, GARDENS	USED WHERE VEGETATION IS NOT EASILY ESTABLISHED. EFFECTIVE FOR HIGH VELOCITIES OR HIGH CONCENTRATIONS. PERMITS RUNOFF TO INFILTRATE SOIL. DISAPPEARS ENERGY FLOW AT SYSTEM OUTLETS.	*	*	*					40	INLET SEDIMENT TRAP	EASY TO SHAPE. COLLECTS SEDIMENT. MAY BE CLEANED AND EXPANDED AS NEEDED.				*			
14	AGGREGATE COVER	STABILIZES SOIL SURFACE, THIS MINIMIZING EROSION. PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER. MAY BE USED AS PART OF PERMANENT EROSION CONTROL OF PAVED AREAS.					*		*	41	STONE AND ROCK CROSSING	MAY BE ROCK OR CLEAN RUBBLE. MINIMIZES STREAM TURBIDITY. PERMITS PASSAGE OF WATER. MAY ALSO SERVE AS SLOPE CHECK OR SEDIMENT TRAP.		*			*		
15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VOLUME AND VELOCITY. REGULAR SURFACE WILL HELP SLOW VELOCITY.	*				*		*	42	TEMPORARY CULVERT	ELIMINATES STREAM TURBULENCE AND TURBIDITY. PERMITS UNOBSTRUCTED FLOW OF FISH AND OTHER WATER LIFE. CAPACITY FOR NORMAL FLOW CAN BE PROVIDED WITH STORM WATER FLOWING OVER ROADWAY.		*			*		
16	CURB & GUTTER	KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE. COLLECTS AND CONDUCTS RUNOFF TO INCLUDED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY.					*		*	43	CULVERT SEDIMENT TRAP	EASY TO INSTALL AT INLET. KEEPS CULVERT CLEAR AND FREE FLOWING. MAY BE CONSTRUCTED OF LOGS OR LOGS.		*			*		
17	BENCHES	REDUCES RUNOFF VELOCITY BY REDUCING EFFECTIVE SLOPE LENGTH. COLLECTS SEDIMENT. PROVIDES ACCESS TO SLOPES FOR SEEDING, MULCHING AND MAINTENANCE.	*						*	44	CULVERT SEDIMENT TRAP	DEFLECTS CURRENTS AWAY FROM STREAMBANK AREAS.		*					
18	DIVERSION BERM	DIRTETS WATER FROM VULNERABLE AREAS. COLLECTS AND DIRTETS WATER TO PREPARED DRAINAGEWAYS. MAY BE PLACED AS PART OF NORMAL CONSTRUCTION OPERATION.	*	*	*		*	*	*	45	TEMP. STREAM CHANNEL CHANGE	NEW CHANNEL KEEPS NORMAL FLOWS AWAY FROM CONSTRUCTION. REQUIRES STATE PERMIT.		*					
19	DIVERSION DITCH	COLLECTS AND DIRTETS WATER TO REDUCE EROSION POTENTIAL. MAY BE INCORPORATED IN PERMANENT PROJECT DRAINAGE SYSTEMS.	*	*	*		*	*	*	46	SHEET PILING	PROTECTS ERODIBLE BANK AREAS FROM STREAM CURRENTS DURING CONSTRUCTION. MINIMAL DISRUPTION WHEN REMOVED.		*					
20	BERM & DITCH	DIRTETS WATER TO A PREPARED DRAINAGEWAY. MAY BE USED AT INTERVALS ACROSS SLOPE FACE TO REDUCE EFFECTIVE SLOPE LENGTH.	*	*	*		*	*	*	47	COTTERDAM	WORK CAN BE CONTINUED DURING MOST ANTICIPATED STREAM CONDITIONS. CLEAR WATER CAN BE PUMPED DIRECTLY BACK INTO STREAM.		*					
21	FILTER BERM	CONSTRUCTED OF GRAVEL OR STONE. INTERCEPTS AND DIRTETS RUNOFF TO STABILIZED AREAS OR PREPARED DRAINAGE SYSTEMS. SLOWS RUNOFF AND COLLECTS SEDIMENT.	*	*			*		*	48	CONSTRUCTION DAM	PERMITS WORK TO CONTINUE DURING NORMAL STREAM STAGES. CONTROLLED FLOODING CAN BE ACCOMPLISHED DURING PERIODS OF INACTIVITY.		*			*		
22	BRUSH FILTER	USES SLASH AND LOGS FROM CLEARING OPERATIONS. CAN BE COVERED AND SEEDS RATHER THAN REMOVED. ELIMINATES NEED FOR BURNING OR REMOVAL OF MATERIAL FROM SITE.					*		*	49	CHECK DAMS	REDUCES FLOW VELOCITY. CATCHES SEDIMENT. CAN BE CONSTRUCTED OF LOGS, STRAW, HAY, ROCK, LIMBER, MASONRY, OR SAND BAGS.		*	*				
23	BARE CHANNEL	LEAST EXPENSIVE FORM OF DRAINAGEWAY. MAY BE USED ONLY WHERE GRADIENT IS VERY LOW AND WITH SOILS OF MINIMUM EROSION POTENTIAL.			*					50	WEIR	CONTROLS SEDIMENTATION IN LARGE STREAMS. CAUSES MINIMAL TURBIDITY.		*	*				
24	GRASSSED 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.			*					51	RETAINING WALL	REDUCES GRADIENT WHERE SLOPES ARE EXTREMELY STEEP. PERMITS RETENTION OF EXISTING VEGETATION, KEEPING SOIL STABLE IN CRITICAL AREAS. MINIMIZES MAINTENANCE.		*			*		
25	SLOPE DRAIN (SURFACE PIPE)	PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA. USUALLY PERMANENT. CAN BE CONSTRUCTED OR EXTENDED AS GRADING PROGRESSES.	*						*	52	SEEPAGE CONTROL	PREVENTS PIPING AND SOIL SURFACE ON OUT SLOPES.		*			*		
26	SLOPE DRAIN (PIPE CHUTE)	PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA. USUALLY PERMANENT. CAN BE CONSTRUCTED OR EXTENDED AS GRADING PROGRESSES.	*						*	53	WINDBREAK	MINIMIZES WIND EROSION. MAY BE SOD FENCE.				*			
27	SLOPE DRAIN (SUBSURFACE PIPE)	PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA. USUALLY PERMANENT. CAN BE CONSTRUCTED AS GRADING PROGRESSES.	*						*	54	SILT FENCE	USES TEXTILE/FABRIC AND POSTS OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY.			*		*		



- ### SOIL EROSION & SEDIMENTATION CONTROL
- OWNER SHALL SUBMIT A DETAILED EROSION CONTROL PLAN AND OBTAIN A SOIL EROSION & SEDIMENTATION CONTROL PERMIT PRIOR TO ANY EARTH CHANGES.
  - CONSTRUCTION OPERATION SHALL BE SCHEDULED AND PERFORMED SO THAT PREVENTATIVE EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO EXCAVATION AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING BACKFILLING AND/OR GRADING OPERATIONS.
  - BORROW AND FILL DISPOSAL AREAS WILL BE SELECTED AND APPROVED AT TIME OF PLAN REVIEW.
  - SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
  - CLEANUP WILL BE DONE IN A MANNER TO INSURE THAT EROSION CONTROL MEASURES ARE NOT DISTURBED.
  - THE PROJECT WILL CONTINUALLY BE INSPECTED FOR SOIL EROSION AND SEDIMENT CONTROL COMPLIANCE. DEFICIENCIES WILL BE CORRECTED BY THE DEVELOPER WITHIN 24 HOURS.
  - TEMPORARY EROSION CONTROL MEASURES SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR UPON ESTABLISHMENT OF PERMANENT CONTROL MEASURES.
  - ALL TEMPORARY SOIL EROSION CONTROL MEASURES MUST BE REMOVED FROM PROJECT AREAS PRIOR TO ACCEPTANCE OF PROJECT.
  - VEGETATION MUST BE ACCEPTABLY ESTABLISHED PRIOR TO FINAL ACCEPTANCE OF PROJECT.

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TEMP. CONTROL MEASURES												
SITE CONSTRUCTION												
FINISH GRADING												
PERM. CONTROL MEASURES												

- ### CONSTRUCTION SEQUENCE
- IMPLEMENTATION OF TEMPORARY EROSION CONTROL MEASURES; SELECTIVE GRADING.
  - PERIODIC MAINTENANCE OF AFFECTED EROSION CONTROL MEASURES.
  - PERMANENT MEASURES; FINAL GRADING, SEEDING AND MULCHING.

NO.	DATE	DESCRIPTION	BY



PLAN DATE: MAY, 2015  
 PROJECT MGR: SMC  
 REVIEWER: JBM  
 SCALE: NO SCALE

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PREPARED FOR  
**CITY OF MT. PLEASANT**  
**ISLAND PARK IMPROVEMENTS**

SESC LEGEND SHEET

REV: SHT# 4 OF 4  
 JOB No: 15M0030

Project: 15M0030 (City Construction Drawings) - 15M0030-PLAN.dwg  
 PLOTED: 5/6/2015 1:49 PM