

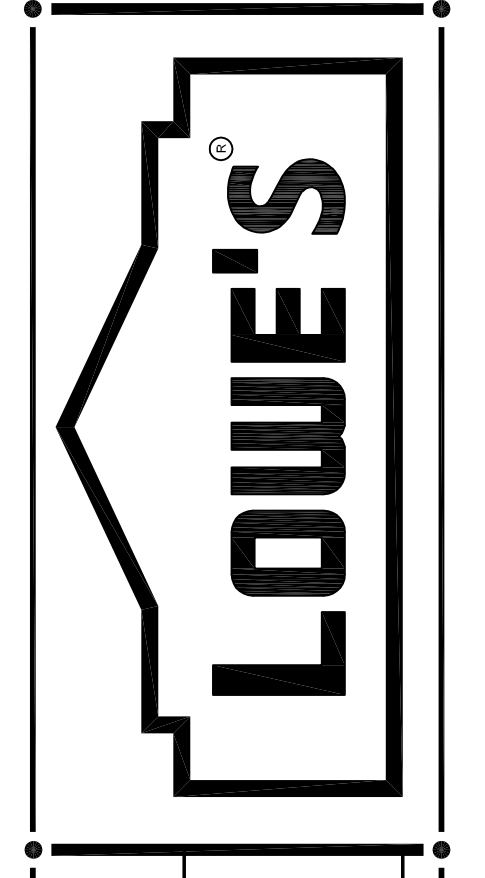
REVISIONS	
DATE	DESCRIPTION
12/1/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
 Engineering • Surveying • Planning  
 Environmental • Water/Wastewater

8 6 6 8 5 0 4 2 0 0  
 www.atwell-hicks.com

MICHIGAN ILLINOIS OHIO FLORIDA

**LOWE'S HOME CENTERS, INC.**  
 1605 CURTIS BRIDGE ROAD  
 REC'D DOCK  
 WILKESBORO, NC 28697  
 336.658.4000 (V) 336.658.3257 (F)



SITE PLAN  
 STORM SEWER PLAN

LOWE'S OF  
 ROCHESTER HILLS  
 OAKLAND COUNTY, MICHIGAN

PROJECT No: 0500184 | DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL  
 ISSUE DATE: 10/18/2005

PERMIT SET  
 ISSUE DATE:

CONSTRUCTION SET  
 ISSUE DATE:

DRAWING NUMBER:  
**SP-23**  
 4102-50-23

**LEGEND**

- PROPERTY LINE
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. MANHOLE
- PROP. MANHOLE
- PROP. EDGE DRAIN
- EXIST. CATCH BASIN/INLET
- PROP. CATCH BASIN/INLET
- END SECTION/HEAD WALL
- CULVERT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEAN OUT
- PROP. CLEAN OUT
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN MANHOLE
- PROP. GATE VALVE IN MANHOLE
- EXIST. OVERHEAD ELECTRIC
- EXIST. UNDERGROUND ELECTRIC
- PROP. UNDERGROUND ELECTRIC
- EXIST. LIGHT POLE
- EXIST. UTILITY POLE
- GUY WIRE
- EXIST. ELECTRIC TRANSFORMER
- EXIST. OVERHEAD TELEPHONE
- EXIST. UNDERGROUND TELEPHONE
- PROP. UNDERGROUND TELEPHONE
- EXIST. GAS
- PROP. GAS
- EXIST. GAS RISER
- EXIST. TELEPHONE RISER
- FENCE
- EXIST. SIGN
- PROP. RIP-RAP OVER GEOTEXTILE FABRIC

**GRADING AND DRAINAGE NOTES**

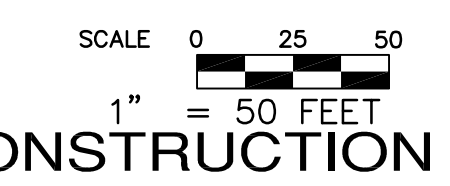
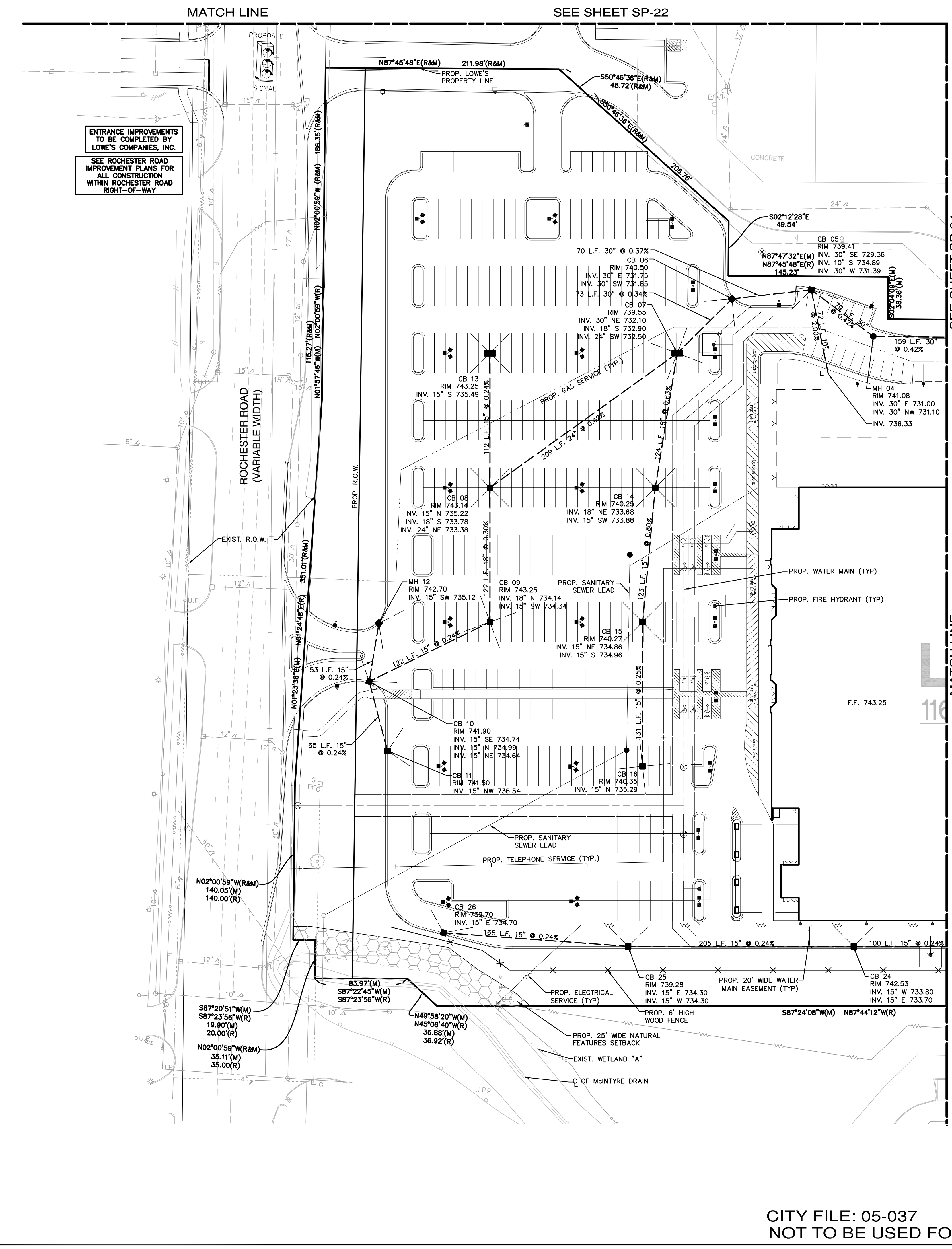
1. ALL EXISTING STRUCTURES, UNLESS OTHERWISE NOTED TO REMAIN, FENCING, TREES, & ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED & DISPOSED OF OFF SITE. ANY BURNING ON SITE SHALL BE SUBJECT TO LOCAL ORDINANCES & LOWE'S SPECIFICATIONS.
2. ALL DRAINAGE STRUCTURES SHALL BE PRE-CAST.
3. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY.
4. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES HAVING UNDERGROUND UTILITIES ON SITE OR IN RIGHT-OF-WAY PRIOR TO EXCAVATION. CONTRACTOR SHALL CONTACT UTILITY LOCATING COMPANY AND LOCATE ALL UTILITIES PRIOR TO GRADING START.
5. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
6. AFTER PERMITS HAVE BEEN OBTAINED & EROSION CONTROL MEASURES INSTALLED, THE CONTRACTOR SHALL GRADE BUILDING PAD, GARDEN CENTER & APRONS TO 1/2"± FT. OF SUBGRADE AS PER SECTION 02300, DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
7. IMMEDIATELY APPLY & COMPACT STONE BASE FOR BUILDING PAD TO +/- 1/2" BEFORE EXCAVATING INTERIOR & PERIMETER FOOTINGS.
8. FRENCH DRAIN SHALL BE INSTALLED IF DIRECTED BY THE GEOTECHNICAL ENGINEER OR AS SHOWN ON PLANS.
9. CONTRACTOR SHALL PROVIDE 2' x 2' x 6" THICK CONCRETE APRON AT ALL CLEANOUTS OUTSIDE OF BUILDING.
10. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
11. ALL ROOF DRAINS TO BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AT THE END.
12. PROPOSED RETENTION POND SHALL HAVE MAXIMUM SIDE SLOPES OF 1 FOOT VERTICAL AND 6 FOOT HORIZONTAL.
13. PROPOSED CATCH BASINS ARE BASED ON THE CENTER OF THE BACK OF CASTING WHICH IS LOCATED ON THE BACK OF CURB. ACTUAL GUTTER LINE OF STRUCTURE SHALL BE CALCULATED PRIOR CONSTRUCTION. REFER TO CITY OF ROCHESTER HILLS TOWNSHIP STORM STANDARDS FOR RIM TYPES.
14. TOP OF CURB GRADE FOR PITCH-OUT CURB WILL BE 0.50' ABOVE TOP OF ASPHALT AND FOR PITCH-IN CURB TOP OF CURB WILL BE 0.42' ABOVE TOP OF ASPHALT.
15. ALL CURB NOT LABELED AS 24" CONCRETE PITCH-IN CURB SHALL BE 24" CONCRETE PITCH-OUT CURB.
16. A PERMIT FROM MDOT SHALL BE REQUIRED FRO ALL WORK WITHIN ROCHESTER ROAD RIGHT-OF-WAY.
17. ALL GRADING MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.
18. ALL STORM MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.

**3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171**  
 FOR THE LOCATION OF UNDERGROUND UTILITIES

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
 CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

COPYRIGHT © 2006 ATWELL-HICKS  
 NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS



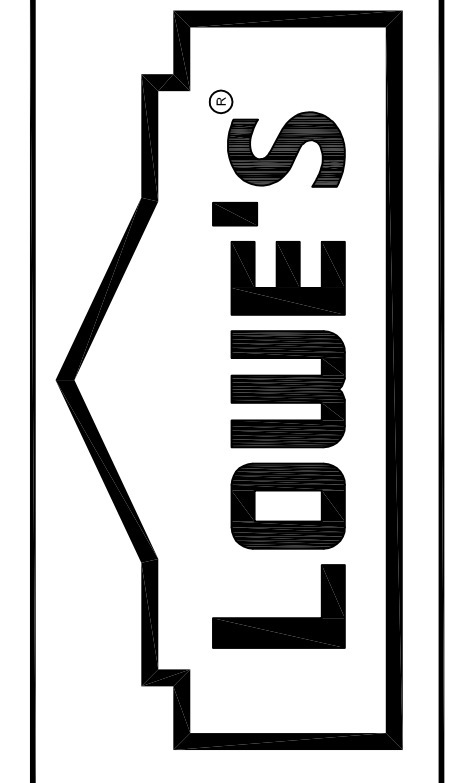
CITY FILE: 05-037  
 NOT TO BE USED FOR CONSTRUCTION

K:\0500184\sp\Plan\_Series\SitePlan\Primary\As\_Submitted\0500184SP-23.dwg, 06/20/06 2:33:46 PM, emh

REVISIONS	
DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
 Engineering • Surveying • Planning  
 Environmental • Water/Wastewater  
 866.850.4200  
 www.atwell-hicks.com  
 MICHIGAN ILLINOIS OHIO FLORIDA

LOWE'S HOME CENTERS, INC.  
 1605 CURTIS BRIDGE ROAD  
 REEC DOCK  
 WILKESBORO, NC 28697  
 336.658.4000 (V) 336.658.3257 (F)



SITE PLAN  
 STORM SEWER PLAN  
 LOWE'S OF  
 ROCHESTER HILLS  
 OAKLAND COUNTY, MICHIGAN  
 PROJECT No: 05000184 DRAWN BY: JTL CHECKED BY: DL

ORIGINAL  
 ISSUE DATE: 10/18/2005  
 PERMIT SET  
 ISSUE DATE:  
 CONSTRUCTION SET  
 ISSUE DATE:  
 DRAWING NUMBER:  
 SP-24  
 4102-50-24

**LEGEND**

- PROPERTY LINE
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. MANHOLE
- PROP. MANHOLE
- PROP. EDGE DRAIN
- EXIST. CATCH BASIN/INLET
- PROP. CATCH BASIN/INLET
- END SECTION/HEAD WALL
- CULVERT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEAN OUT
- PROP. CLEAN OUT
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN MANHOLE
- PROP. GATE VALVE IN MANHOLE
- EXIST. OVERHEAD ELECTRIC
- EXIST. UNDERGROUND ELECTRIC
- PROP. UNDERGROUND ELECTRIC
- EXIST. LIGHT POLE
- EXIST. UTILITY POLE
- GUY WIRE
- EXIST. ELECTRIC TRANSFORMER
- EXIST. OVERHEAD TELEPHONE
- EXIST. UNDERGROUND TELEPHONE
- PROP. UNDERGROUND TELEPHONE
- EXIST. GAS
- PROP. GAS
- EXIST. GAS RISER
- EXIST. TELEPHONE RISER
- FENCE
- EXIST. SIGN
- PROP. RIP-RAP

**GRADING AND DRAINAGE NOTES**

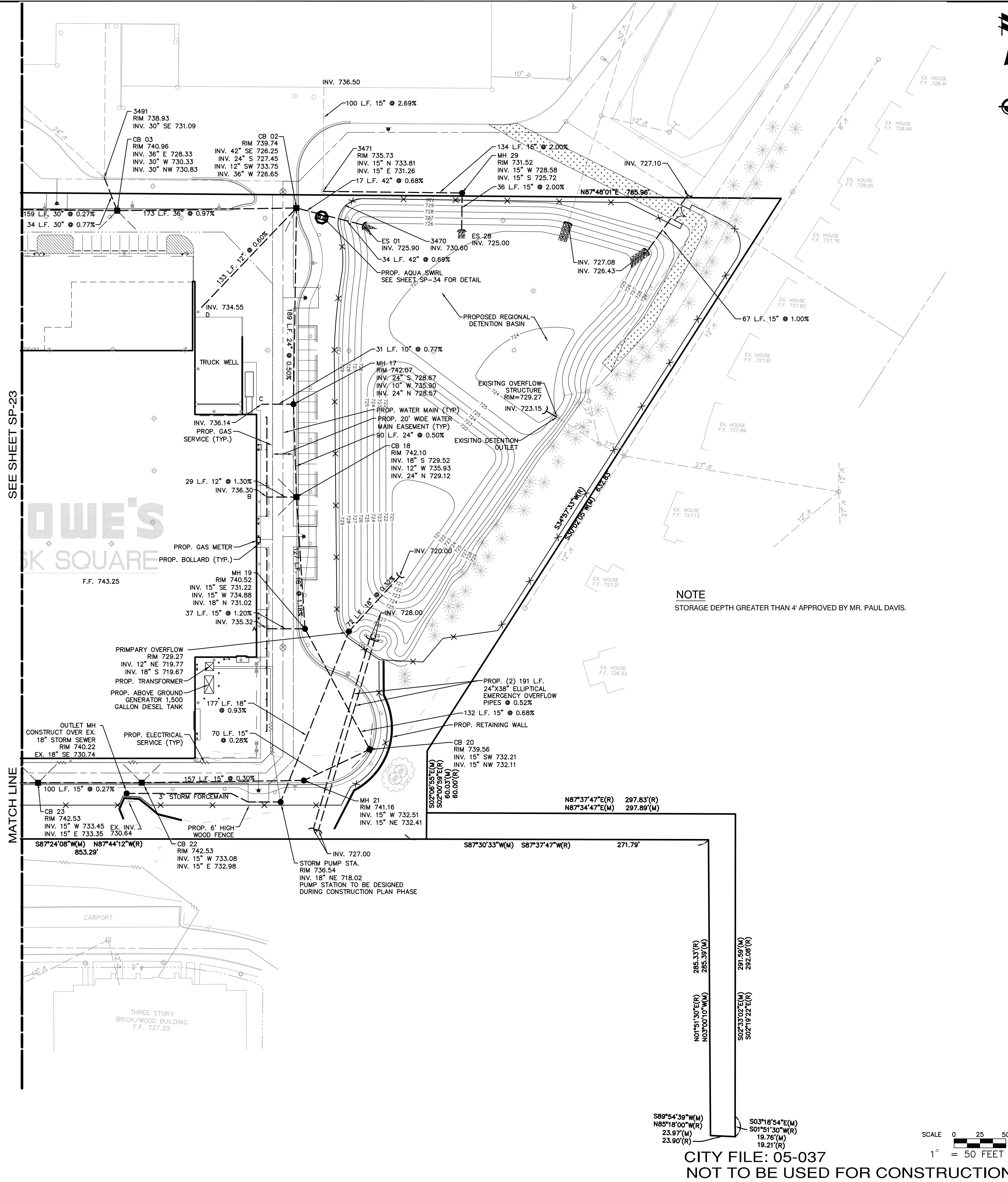
1. ALL EXISTING STRUCTURES, UNLESS OTHERWISE NOTED TO REMAIN, FENCING, TREES, & ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED & DISPOSED OF OFF SITE. ANY BURNING ON SITE SHALL BE SUBJECT TO LOCAL ORDINANCES & LOWE'S SPECIFICATIONS.
2. ALL DRAINAGE STRUCTURES SHALL BE PRE-CAST.
3. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY.
4. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES HAVING UNDERGROUND UTILITIES ON SITE OR IN RIGHT-OF-WAY PRIOR TO EXCAVATION. CONTRACTOR SHALL CONTACT UTILITY LOCATING COMPANY AND LOCATE ALL UTILITIES PRIOR TO GRADING START.
5. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
6. AFTER PERMITS HAVE BEEN OBTAINED & EROSION CONTROL MEASURES INSTALLED, THE CONTRACTOR SHALL GRADE BUILDING PAD, GARDEN CENTER & APRONS TO 1/2" ± FT. OF SUBGRADE AS PER SECTION 02300, DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
7. IMMEDIATELY APPLY & COMPACT STONE BASE FOR BUILDING PAD TO +/- 1/2" BEFORE EXCAVATING INTERIOR & PERIMETER FOOTINGS.
8. FRENCH DRAIN SHALL BE INSTALLED IF DIRECTED BY THE GEOTECHNICAL ENGINEER OR AS SHOWN ON PLANS.
9. CONTRACTOR SHALL PROVIDE 2' x 2' x 6" THICK CONCRETE APRON AT ALL CLEANOUTS OUTSIDE OF BUILDING.
10. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
11. ALL ROOF DRAINS TO BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AT THE END.
12. PROPOSED RETENTION POND SHALL HAVE MAXIMUM SIDE SLOPES OF 1 FOOT VERTICAL AND 6 FOOT HORIZONTAL.
13. PROPOSED CATCH BASINS ARE BASED ON THE CENTER OF THE BACK OF CASTING WHICH IS LOCATED ON THE BACK OF CURB. ACTUAL GUTTER LINE OF STRUCTURE SHALL BE CALCULATED PRIOR CONSTRUCTION. REFER TO CITY OF ROCHESTER HILLS TOWNSHIP STORM STANDARDS FOR RIM TYPES.
14. TOP OF CURB GRADE FOR PITCH-OUT CURB WILL BE 0.50' ABOVE TOP OF ASPHALT AND FOR PITCH-IN CURB TOP OF CURB WILL BE 0.42' ABOVE TOP OF ASPHALT.
15. ALL CURB NOT LABELED AS 24" CONCRETE PITCH-IN CURB SHALL BE 24" CONCRETE PITCH-OUT CURB.
16. A PERMIT FROM MDT SHALL BE REQUIRED FRO ALL WORK WITHIN ROCHESTER ROAD RIGHT-OF-WAY.
17. ALL GRADING MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.
18. ALL STORM MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
 CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

COPYRIGHT © 2006 ATWELL-HICKS  
 NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS



CITY FILE: 05-037  
 NOT TO BE USED FOR CONSTRUCTION

K:\05000184\sp\Plan\_Series\SP-Primary\As\_Bid\05000184SP-24.dwg, 06/20/06 2:34:02 PM, emh



**LEGEND**

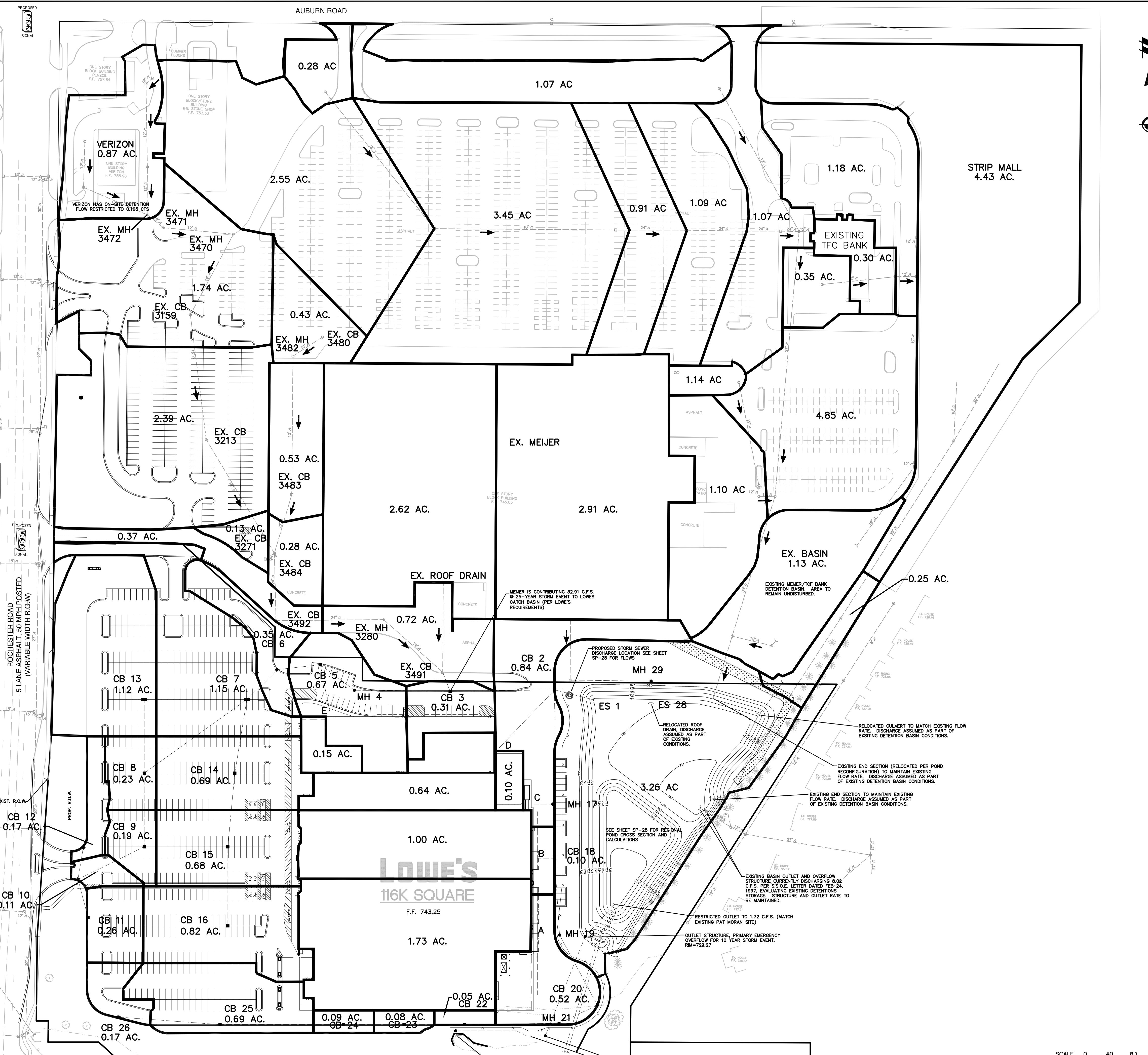
- PROPERTY LINE
- PROP. STORM
- PROP. CATCH BASIN/INLET
- END SECTION/HEAD WALL
- CULVERT
- PROP. DRAINAGE AREA
- PROP. CURB AND GUTTER
- PROP. SWALE

**GRADING AND DRAINAGE NOTES**

1. ALL EXISTING STRUCTURES, UNLESS OTHERWISE NOTED TO REMAIN, FENCING, TREES, & ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED & DISPOSED OF OFF SITE. ANY BURNING ON SITE SHALL BE SUBJECT TO LOCAL ORDINANCES & LOWE'S SPECIFICATIONS.
2. ALL DRAINAGE STRUCTURES SHALL BE PRE-CAST.
3. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY.
4. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES HAVING UNDERGROUND UTILITIES ON SITE OR IN RIGHT-OF-WAY PRIOR TO EXCAVATION. CONTRACTOR SHALL CONTACT UTILITY LOCATING COMPANY AND LOCATE ALL UTILITIES PRIOR TO GRADING START.
5. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
6. AFTER PERMITS HAVE BEEN OBTAINED & EROSION CONTROL MEASURES INSTALLED, THE CONTRACTOR SHALL GRADE BUILDING PAD, GARDEN CENTER & APRONS TO 1/2"± FT. OF SUBGRADE AS PER SECTION 02300, DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
7. IMMEDIATELY APPLY & COMPACT STONE BASE FOR BUILDING PAD TO +/- 1/2" BEFORE EXCAVATING INTERIOR & PERIMETER FOOTINGS.
8. FRENCH DRAIN SHALL BE INSTALLED IF DIRECTED BY THE GEOTECHNICAL ENGINEER OR AS SHOWN ON PLANS.
9. CONTRACTOR SHALL PROVIDE 2' x 2' x 6" THICK CONCRETE APRON AT ALL CLEANOUTS OUTSIDE OF BUILDING.
10. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
11. ALL ROOF DRAINS TO BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AT THE END.
12. PROPOSED RETENTION POND SHALL HAVE MAXIMUM SIDE SLOPES OF 1 FOOT VERTICAL AND 6 FOOT HORIZONTAL.
13. PROPOSED CATCH BASINS ARE BASED ON THE CENTER OF THE BACK OF CASTING WHICH IS LOCATED ON THE BACK OF CURB. ACTUAL GUTTER LINE OF STRUCTURE SHALL BE CALCULATED PRIOR TO CONSTRUCTION. REFER TO CITY OF ROCHESTER HILLS TOWNSHIP STORM STANDARDS FOR RIM TYPES.
14. TOP OF CURB GRADE FOR PITCH-OUT CURB WILL BE 0.50' ABOVE TOP OF ASPHALT AND FOR PITCH-IN CURB TOP OF CURB WILL BE 0.42' ABOVE TOP OF ASPHALT.
15. ALL CURB NOT LABELED AS 24" CONCRETE PITCH-IN CURB SHALL BE 24" CONCRETE PITCH-OUT CURB.
16. A PERMIT FROM MDOT SHALL BE REQUIRED FOR ALL WORK WITHIN ROCHESTER ROAD RIGHT-OF-WAY.
17. ALL GRADING MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.
18. ALL STORM MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.

Structure	Area
POND	3.26
CB2	0.84
CB3	0.31
CB5	0.67
CB6	0.35
CB7	1.15
CB8	0.23
CB9	0.19
CB10	0.11
CB11	0.26
CB12	0.17
CB13	1.12
CB14	0.69
CB15	0.68
CB16	0.82
CB18	0.10
CB20	0.52
CB22	0.05
CB23	0.08
CB24	0.09
CB25	0.69
CB26	0.17
RFD	0.64
RFB	1.00
RFA	1.73
RFE	0.15
TRK C	0.10
<b>Total Area</b>	<b>16.18</b>

ENTRANCE IMPROVEMENTS TO BE COMPLETED BY LOWE'S COMPANIES, INC.



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

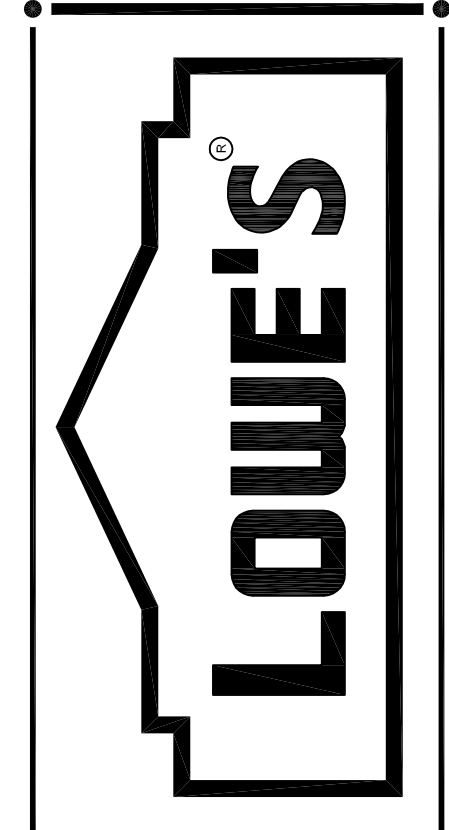
COPYRIGHT © 2006 ATWELL-HICKS  
NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS

**REVISIONS**

DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
Engineering • Surveying • Planning  
Environmental • Water/Wastewater  
866.850.4200  
www.atwell-hicks.com  
MICHIGAN ILLINOIS OHIO FLORIDA

**LOWE'S HOME CENTERS, INC.**  
1605 CURTIS BRIDGE ROAD  
REC DOCK  
WILKESBORO, NC 28697  
336.658.4000 (V) 336.658.3257 (F)

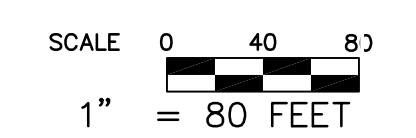


**SITE PLAN  
OVERALL DRAINAGE AREA PLAN**

**LOWE'S OF  
ROCHESTER HILLS  
OAKLAND COUNTY, MICHIGAN**

PROJECT No: 0500184 | DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL ISSUE DATE: 10/18/2005  
PERMIT SET ISSUE DATE:  
CONSTRUCTION SET ISSUE DATE:  
DRAWING NUMBER:  
**SP-25**  
4102-50-25



CITY FILE: 05-037  
NOT TO BE USED FOR CONSTRUCTION

K:\0500184\sp-25\Plan\_SitePlan\_Preliminary.dwg Submitted: 05/09/06 APPROVED BY: CITY OF ROCHESTER HILLS PLANNING COMMISSION (05/09/06) (SP-25-DA) DWG: 05/09/06 2:34:16 PM: enthr



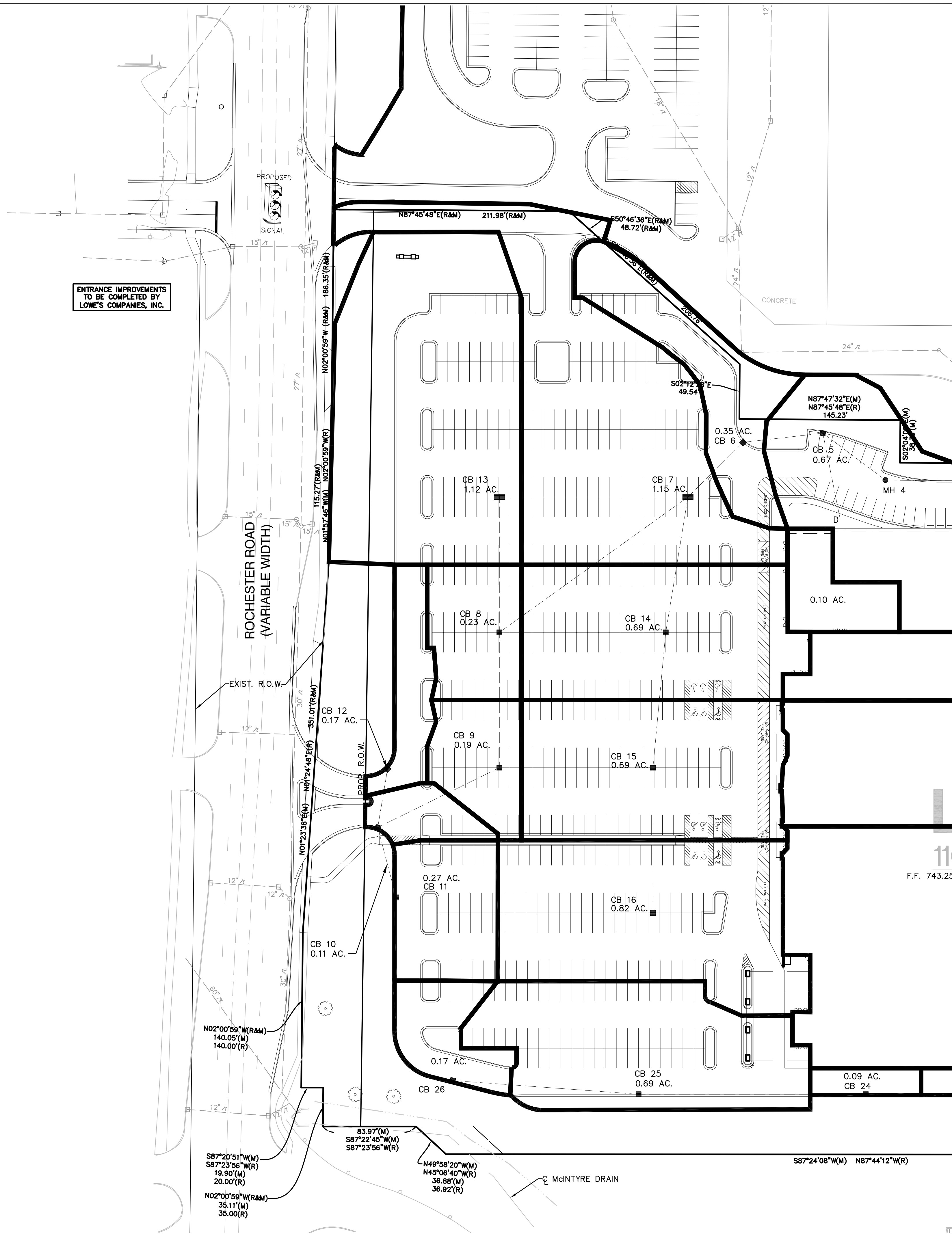
**LEGEND**

- PROPERTY LINE
- PROP. STORM
- PROP. CATCH BASIN/INLET
- END SECTION/HEAD WALL
- CULVERT
- PROP. DRAINAGE AREA
- PROP. CURB AND GUTTER
- PROP. SWALE

**GRADING AND DRAINAGE NOTES**

1. ALL EXISTING STRUCTURES, UNLESS OTHERWISE NOTED TO REMAIN, FENCING, TREES, & ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED & DISPOSED OF OFF SITE. ANY BURNING ON SITE SHALL BE SUBJECT TO LOCAL ORDINANCES & LOWE'S SPECIFICATIONS.
2. ALL DRAINAGE STRUCTURES SHALL BE PRE-CAST.
3. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H200) LOADING AND BE INSTALLED ACCORDINGLY.
4. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES HAVING UNDERGROUND UTILITIES ON SITE OR IN RIGHT-OF-WAY PRIOR TO EXCAVATION. CONTRACTOR SHALL CONTACT UTILITY LOCATING COMPANY AND LOCATE ALL UTILITIES PRIOR TO GRADING START.
5. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
6. AFTER PERMITS HAVE BEEN OBTAINED & EROSION CONTROL MEASURES INSTALLED, THE CONTRACTOR SHALL GRADE BUILDING PAD, GARDEN CENTER & APRONS TO 1/2" ± FT. OF SUBGRADE AS PER SECTION 02300, DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
7. IMMEDIATELY APPLY & COMPACT STONE BASE FOR BUILDING PAD TO +/- 1/2" BEFORE EXCAVATING INTERIOR & PERIMETER FOOTINGS.
8. FRENCH DRAIN SHALL BE INSTALLED IF DIRECTED BY THE GEOTECHNICAL ENGINEER OR AS SHOWN ON PLANS.
9. CONTRACTOR SHALL PROVIDE 2' x 2' x 6" THICK CONCRETE APRON AT ALL CLEANOUTS OUTSIDE OF BUILDING.
10. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
11. ALL ROOF DRAINS TO BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AT THE END.
12. PROPOSED RETENTION POND SHALL HAVE MAXIMUM SIDE SLOPES OF 1 FOOT VERTICAL AND 6 FOOT HORIZONTAL.
13. PROPOSED CATCH BASINS ARE BASED ON THE CENTER OF THE BACK OF CASTING WHICH IS LOCATED ON THE BACK OF CURB. ACTUAL GUTTER LINE OF STRUCTURE SHALL BE CALCULATED PRIOR CONSTRUCTION. REFER TO CITY OF ROCHESTER HILLS TOWNSHIP STORM STANDARDS FOR RIM TYPES.
14. TOP OF CURB GRADE FOR PITCH-OUT CURB WILL BE 0.50' ABOVE TOP OF ASPHALT AND FOR PITCH-IN CURB TOP OF CURB WILL BE 0.42' ABOVE TOP OF ASPHALT.
15. ALL CURB NOT LABELED AS 24" CONCRETE PITCH-IN CURB SHALL BE 24" CONCRETE PITCH-OUT CURB.
16. A PERMIT FROM MDOT SHALL BE REQUIRED FRO ALL WORK WITHIN ROCHESTER ROAD RIGHT-OF-WAY.
17. ALL GRADING MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.
18. ALL STORM MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.

ENTRANCE IMPROVEMENTS TO BE COMPLETED BY LOWE'S COMPANIES, INC.



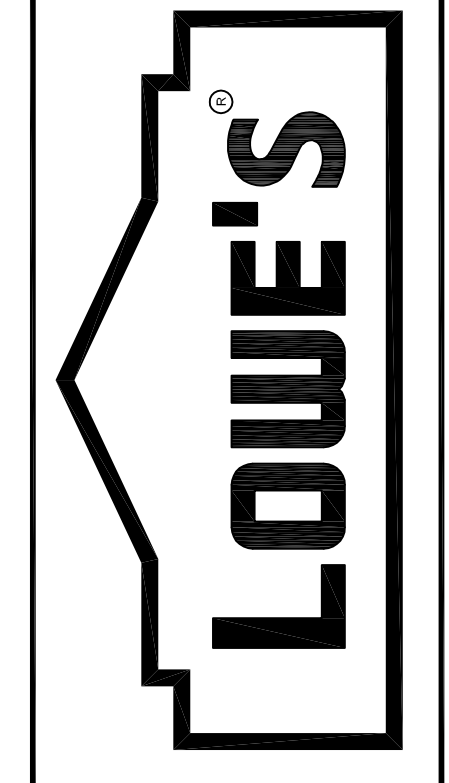
SEE SHEET SP-27

MATCH LINE

REVISIONS	
DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
 Engineering • Surveying • Planning  
 Environmental • Water/Wastewater  
 8 6 6 8 5 0 4 2 0 0  
 www.atwell-hicks.com  
 MICHIGAN ILLINOIS OHIO FLORIDA

LOWE'S HOME CENTERS, INC.  
 1605 CURTIS BRIDGE ROAD  
 REEC DOCK  
 WILKESBORO, NC 28697  
 336.658.4000 (V) 336.658.3257 (F)



SITE PLAN  
 DRAINAGE AREA PLAN  
 LOWE'S OF  
 ROCHESTER HILLS  
 OAKLAND COUNTY, MICHIGAN  
 PROJECT No. 05000184 | DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL  
 ISSUE DATE: 10/18/2005  
 PERMIT SET  
 ISSUE DATE:  
 CONSTRUCTION SET  
 ISSUE DATE:  
 DRAWING NUMBER:  
 SP-26  
 4102-50-26

**3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171**  
 FOR THE LOCATION OF UNDERGROUND UTILITIES

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
 CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

COPYRIGHT © 2006 ATWELL-HICKS  
 NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS

SCALE 0 25 50  
 1" = 50 FEET

CITY FILE: 05-037  
 NOT TO BE USED FOR CONSTRUCTION

K:\05000184\sp-26\Plan\_SitePlan\_Preliminary.dwg SUBMITTED 2/26/06 APPROVED BY CITY OF ROCHESTER HILLS PLANNING COMMISSION 05/09/06 10:51:26 AM 3/10/06 2:34:35 PM enthr



**LEGEND**

- PROPERTY LINE
- PROP. STORM
- PROP. CATCH BASIN/INLET
- END SECTION/HEAD WALL
- CULVERT
- PROP. DRAINAGE AREA
- PROP. CURB AND GUTTER
- PROP. SWALE

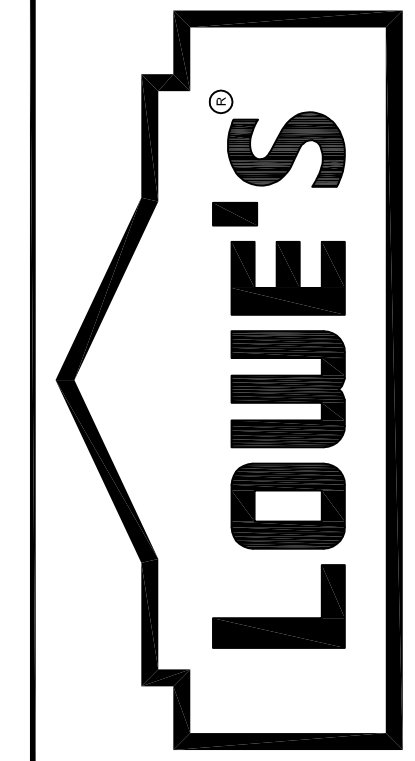
**GRADING AND DRAINAGE NOTES**

1. ALL EXISTING STRUCTURES, UNLESS OTHERWISE NOTED TO REMAIN, FENCING, TREES, & ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED & DISPOSED OF OFF SITE. ANY BURNING ON SITE SHALL BE SUBJECT TO LOCAL ORDINANCES & LOWE'S SPECIFICATIONS.
2. ALL DRAINAGE STRUCTURES SHALL BE PRE-CAST.
3. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY.
4. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES HAVING UNDERGROUND UTILITIES ON SITE OR IN RIGHT-OF-WAY PRIOR TO EXCAVATION. CONTRACTOR SHALL CONTACT UTILITY LOCATING COMPANY AND LOCATE ALL UTILITIES PRIOR TO GRADING START.
5. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
6. AFTER PERMITS HAVE BEEN OBTAINED & EROSION CONTROL MEASURES INSTALLED, THE CONTRACTOR SHALL GRADE BUILDING PAD, GARDEN CENTER & APRONS TO 1/2" ± FT. OF SUBGRADE AS PER SECTION 02300, DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
7. IMMEDIATELY APPLY & COMPACT STONE BASE FOR BUILDING PAD TO +/- 1/2" BEFORE EXCAVATING INTERIOR & PERIMETER FOOTINGS.
8. FRENCH DRAIN SHALL BE INSTALLED IF DIRECTED BY THE GEOTECHNICAL ENGINEER OR AS SHOWN ON PLANS.
9. CONTRACTOR SHALL PROVIDE 2" x 2" x 6" THICK CONCRETE APRON AT ALL CLEANOUTS OUTSIDE OF BUILDING.
10. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH DIVISION 2 OF LOWE'S STANDARD SITE SPECIFICATIONS.
11. ALL ROOF DRAINS TO BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AT THE END.
12. PROPOSED RETENTION POND SHALL HAVE MAXIMUM SIDE SLOPES OF 1 FOOT VERTICAL AND 6 FOOT HORIZONTAL.
13. PROPOSED CATCH BASINS ARE BASED ON THE CENTER OF THE BACK OF CASTING WHICH IS LOCATED ON THE BACK OF CURB. ACTUAL GUTTER LINE OF STRUCTURE SHALL BE CALCULATED PRIOR CONSTRUCTION. REFER TO CITY OF ROCHESTER HILLS TOWNSHIP STORM STANDARDS FOR RIM TYPES.
14. TOP OF CURB GRADE FOR PITCH-OUT CURB WILL BE 0.50' ABOVE TOP OF ASPHALT AND FOR PITCH-IN CURB TOP OF CURB WILL BE 0.42' ABOVE TOP OF ASPHALT.
15. ALL CURB NOT LABELED AS 24" CONCRETE PITCH-IN CURB SHALL BE 24" CONCRETE PITCH-OUT CURB.
16. A PERMIT FROM MDOT SHALL BE REQUIRED FRO ALL WORK WITHIN ROCHESTER ROAD RIGHT-OF-WAY.
17. ALL GRADING MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.
18. ALL STORM MUST BE DESIGNED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.

REVISIONS	
DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

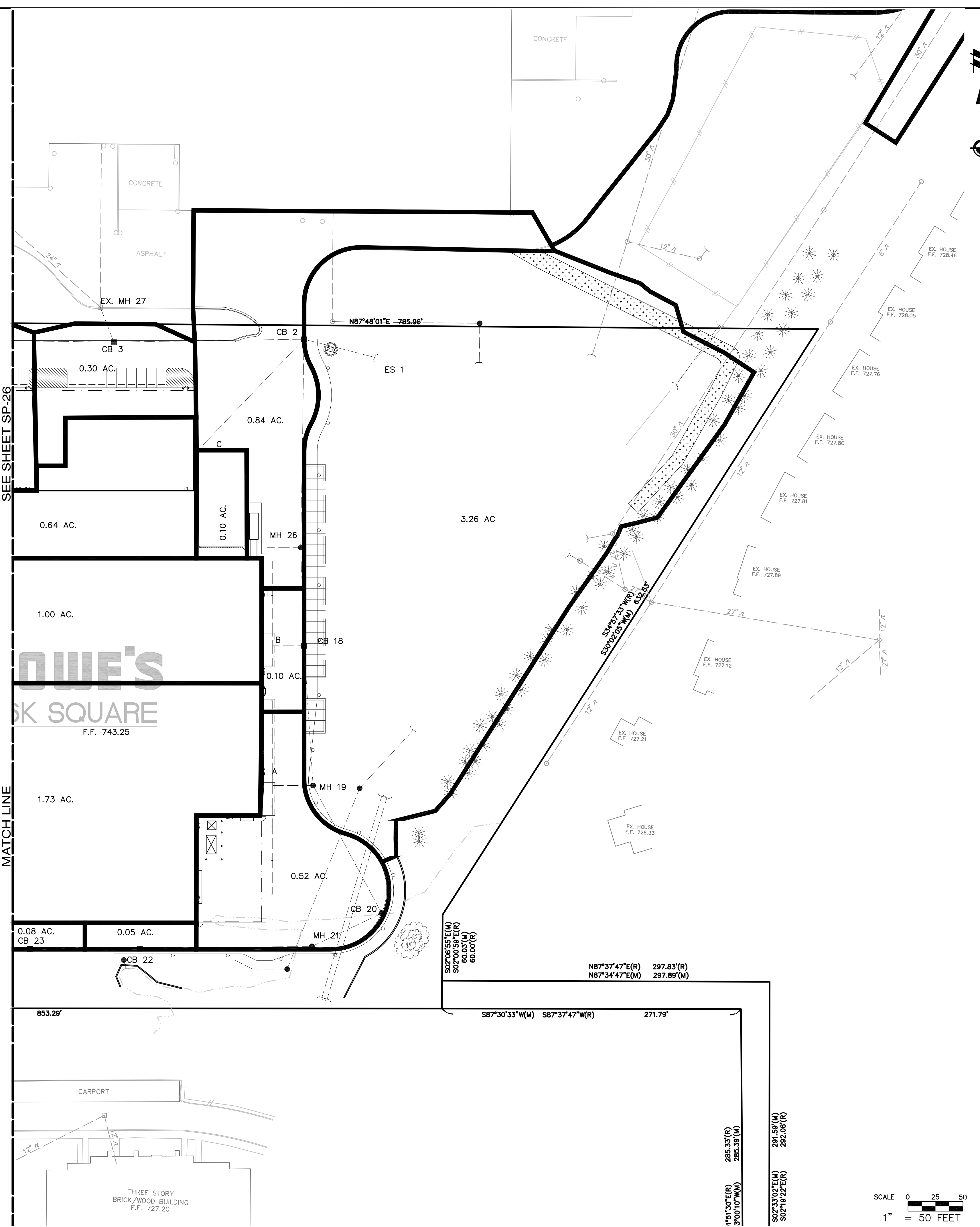
**ATWELL-HICKS**  
 Engineering • Surveying • Planning  
 Environmental • Water/Wastewater  
 8 6 6 8 5 0 4 2 0 0  
 www.atwell-hicks.com  
 MICHIGAN ILLINOIS OHIO FLORIDA

LOWE'S HOME CENTERS, INC.  
 1605 CURTIS BRIDGE ROAD  
 REEC DOCK  
 WILKESBORO, NC 28697  
 336.658.4000 (V) 336.658.3257 (F)



SITE PLAN  
 DRAINAGE AREA PLAN  
 LOWE'S OF  
 ROCHESTER HILLS  
 OAKLAND COUNTY, MICHIGAN  
 PROJECT No: 05000184 | DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL  
 ISSUE DATE: 10/18/2005  
 PERMIT SET  
 ISSUE DATE:  
 CONSTRUCTION SET  
 ISSUE DATE:  
 DRAWING NUMBER:  
 SP-27  
 4102-50-27



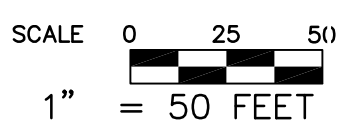
SEE SHEET SP-26

MATCH LINE

853.29'

CARPORT

THREE STORY BRICK/WOOD BUILDING F.F. 727.20



CITY FILE: 05-037  
 NOT TO BE USED FOR CONSTRUCTION



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
 CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

COPYRIGHT © 2006 ATWELL-HICKS  
 NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS

K:\05000184\sp\Plan\_Site\SitePlan\Primary\As\_Bid\05000184\_Sp27-DA.dwg, 3/1/2006 2:34:50 PM, entbr



LOWE'S REQUIRED STORAGE @ 1.72 C.F.S.  
PER GWE AS BUILT DRAWING FOR RELEASE  
FROM PAT MORAN'S DETENTION BASIN

REVISIONS	
DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

Existing Regional Detention Basin Storage Volume			
North Basin			
Elevation	Area (sf)	Volume	Total Volume
729.27	6,279 sf	1,544 cf	4,935 cf
729.00	5,159 sf	3,391 cf	3,391 cf
728.00	1,622 sf	0 cf	0 cf
South Basin			
Elevation	Area (sf)	Volume	Total Volume
729.27	81,457 sf	21,847 cf	241,263 cf
729.00	80,373 sf	78,258 cf	219,416 cf
728.00	76,143 sf	70,167 cf	141,158 cf
727.00	64,190 sf	48,714 cf	70,992 cf
726.00	33,237 sf	19,274 cf	22,278 cf
725.00	5,310 sf	2,844 cf	3,005 cf
724.00	378 sf	161 cf	161 cf
723.15	0 sf	0 cf	0 cf
Total Existing Regional Storage Capacity = 246,198 cf			

Proposed Regional Detention Basin Storage Volume			
North (Existing) Outlet			
Elevation	Area (sf)	Volume	Total Volume
729.27	86,923 sf	23,217 cf	388,535 cf
729.00	85,052 sf	81,636 cf	365,319 cf
728.00	78,220 sf	74,928 cf	283,683 cf
727.00	71,636 sf	68,475 cf	208,755 cf
726.00	65,313 sf	57,937 cf	140,280 cf
725.00	27,609 sf	16,353 cf	18,519 cf
724.00	5,097 sf	2,166 cf	2,166 cf
723.15	0 sf	0 cf	0 cf
South (Pump) Outlet			
Elevation	Area (sf)	Volume	Total Volume
725.00	22,951 sf	21,172 cf	63,825 cf
724.00	19,392 sf	17,726 cf	42,655 cf
723.00	16,060 sf	14,508 cf	24,927 cf
722.00	12,956 sf	8,449 cf	10,419 cf
721.00	3,941 sf	1,971 cf	1,971 cf
720.00	0 sf	0 cf	0 cf
Total Proposed Regional Storage Capacity = 388,535 cf			

Existing Regional Storage Capacity (To Maintain) =	246,198 cf
Storage Capacity Required for Proposed Development =	104,172 cf
Total Volume Required =	350,370 cf
Total Volume Provided =	388,535 cf
Excess Capacity =	38,166 cf
Proposed Regional Detention Basin Oversized =	9.82%

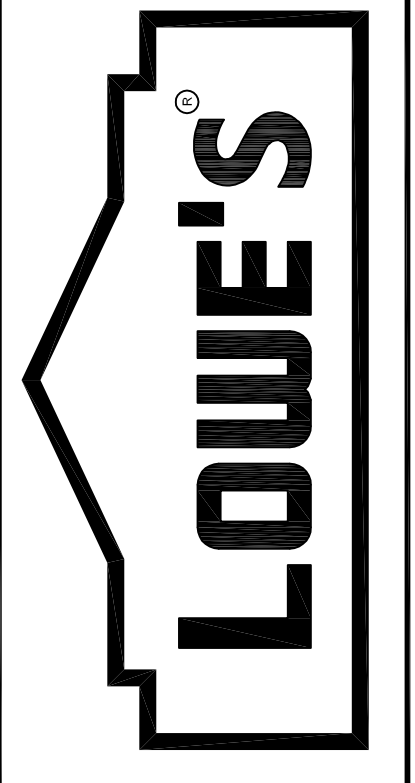
DETENTION BASIN DESIGN PER OAKLAND COUNTY STANDARDS			
ATWELL-HICKS, INC. 50182 Schoenherr Rd Skelby Township, MI 48315 Phone: 586.786.9800 Fax: 586.786.5588			
Project Name:	Lowes's of Rochester Hills	Client:	Lowes's
Location:	Rochester Hills	Job Number:	5000184
Date:	March 7, 2006	Prepared by:	DL
Contributing Area (Acres)	16.10	Weighted Runoff Coefficient (C)	0.78
Time of Concentration (min)	15		
Calculation Results			
Return Period	Q (cfs)	Q (cfs)	Q (cfs)
1-Year Storm	25(42700)Q <sub>0</sub> /0.5	25(42700)Q <sub>0</sub> /0.5	(44330)T <sup>1.17</sup> (25)400Q <sub>0</sub> T
5-Year Storm	143(Tc+25)	25(4437)Q <sub>0</sub> /0.5	(87000)T <sup>1.17</sup> (25)400Q <sub>0</sub> T
10-Year Storm	173(Tc+25)	25(4682)Q <sub>0</sub> /0.5	(105900)T <sup>1.17</sup> (25)400Q <sub>0</sub> T
25-Year Storm	213(Tc+25)	25(4802)Q <sub>0</sub> /0.5	(129000)T <sup>1.17</sup> (25)400Q <sub>0</sub> T
50-Year Storm	243(Tc+25)	25(4937)Q <sub>0</sub> /0.5	(147000)T <sup>1.17</sup> (25)400Q <sub>0</sub> T
100-Year Storm	273(Tc+25)	25(5032)Q <sub>0</sub> /0.5	(165000)T <sup>1.17</sup> (25)400Q <sub>0</sub> T
Allowable Outflow Q <sub>0</sub> = (Contributing Area * 0.2 cfs/Acre) =	3.22 cfs		1.72 cfs per GWE
Q <sub>0</sub> = (Q <sub>0</sub> x C <sub>0</sub> ) / T <sub>0</sub> =	0.184		1.72 CFS per GWE Plans 9-21-2000 as-built plans
T <sub>0</sub> = Time of Concentration (10 - 20 Minutes)			
T = Storage Time			
Calculation Results			
Return Period	Q (cfs)	Q (cfs)	Q (cfs)
1 Year	180	118,810 mm	2,922.381 cfs/acre
5 Year	383	174,863 mm	6,659.962 cfs/acre
10 Year	438	194,550 mm	8,244.977 cfs/acre
25 Year	538	218,357 mm	10,385.753 cfs/acre
50 Year	613	234,776 mm	12,066.879 cfs/acre
100 Year	688	250,221 mm	13,633.666 cfs/acre
Storm Water Storage Required: V = V <sub>s</sub> * C <sub>s</sub> A			
1-Year Storm storage volume required:	36,923.12 cf.	Top of Storage Elevation:	729.18
5-Year Storm storage volume required:	84,140.90 cf.	Outlet Pipe Elevation (Inv):	720.00
10-Year Storm storage volume required:	104,171.99 cf.	Inflow Equation: A <sub>p</sub> = Q <sub>0</sub> (4.22gh <sup>1.5</sup> )	
25-Year Storm storage volume required:	131,219.83 cf.	Area Outlet =	0.11 ft <sup>2</sup>
50-Year Storm storage volume required:	151,762.11 cf.	Pipe Diameter =	4.57 inches
100-Year Storm storage volume required:	172,319.01 cf.		

NOTE: ADDITIONAL 1.72 C.F.S. SHALL BE RELEASED FROM A PUMP STATION INTO EXISTING 18" PIPE FROM PAT MORAN'S DETENTION POND INTO THE EXISTING WETLANDS AS PREVIOUSLY DESIGNED. SEE UTILITY PLANS FOR LOCATION.

**ATWELL-HICKS**  
Engineering • Surveying • Planning  
Environmental • Water/Wastewater  
8 6 6 8 5 0 4 2 0 0  
www.atwell-hicks.com  
MICHIGAN ILLINOIS OHIO FLORIDA

LOWE'S HOME CENTERS, INC.  
1605 CURTIS BRIDGE ROAD  
REC DOCK  
WILKESBORO, NC 28697  
336.658.4000 (V) 336.658.3257 (F)

THIS DRAWING IS THE PROPERTY OF LOWE'S HOME CENTERS, INC. ANY USE OR REPRODUCTION IN WHOLE OR PART IS PROHIBITED WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOWE'S HOME CENTERS, INC. COPYRIGHT 2006 ALL RIGHTS RESERVED.



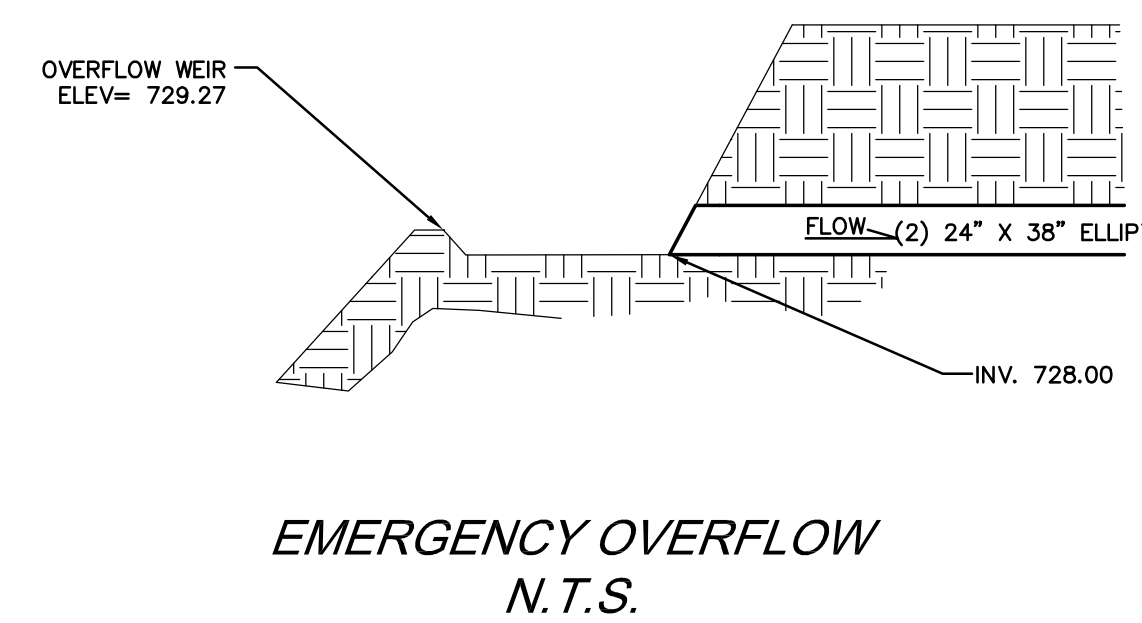
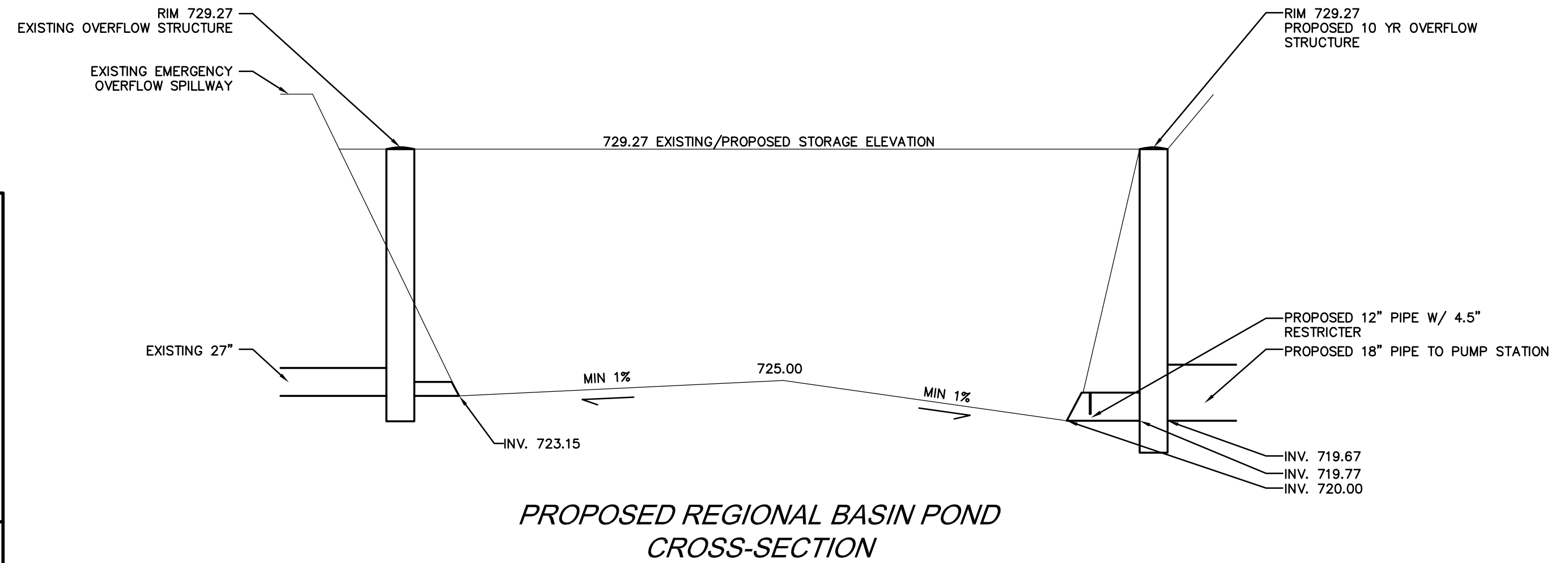
SITE PLAN  
STORM SEWER CALCULATIONS  
LOWE'S OF  
ROCHESTER HILLS  
OAKLAND COUNTY, MICHIGAN  
PROJECT No: 0500184 DRAWN BY: JTL CHECKED BY: DL

ORIGINAL ISSUE DATE: 10/18/2005  
PERMIT SET ISSUE DATE:  
CONSTRUCTION SET ISSUE DATE:  
DRAWING NUMBER:  
SP-28  
4102-50-28

RESTRICTED OUTLET CALCULATIONS	
Restrictor and Outlet Pipe to Overflow	
Restrictor to be placed in the upstream bulkhead of the permanent outlet pipe	
Allowable Outflow From Basin (Q <sub>a</sub> ) =	1.720 cfs
Assumed Diameter of Outlet Pipe =	12 inches
A <sub>o</sub> = Q <sub>a</sub> / (6.2 x (2gH) <sup>1/2</sup> ) =	0.11 sf
Maximum Allowable Diameter of Restrictor =	4.57 inches
Design Diameter of Restrictor =	4.12 inches
Diameter (D out) =	1.0 ft
Area (A out) =	0.79 ft <sup>2</sup>
Pipe Material =	Concrete
Roughness (n) =	0.013
Hydraulic Radius (R) = D out / 4 =	0.250
Minimum Slope Required	0.23%
$S = \left( \frac{Q_r}{1.486 \times (A_{out}) \times R^{2/3}} \right)^2$	
Design Slope (S) =	0.32%
V = Q <sub>max</sub> / A out =	1.72 ft <sup>3</sup> /sec
V (flowing full) =	2.57 ft <sup>3</sup> /sec
Outlet Invert =	720.00
Distance from Outlet to Primary Overflow =	72 ft
Invert into Primary Overflow =	719.77
Percentage of Allowable Outlet Capacity =	98.39%

10 Year Outlet pipe from Primary Overflow to Pump Station	
Total Drainage Area (A)	16.10 ac
Compound "C"	0.78
Time of Concentration (From Site Storm Sewer) =	21.79 min
Time of Concentration (10-yr Storage Time) =	194.56 min
Time of Concentration for Outlet Overflow =	216.35 min
Intensity for 10-yr Storm (i) =	.8 in/hr
Required Capacity Q <sub>r</sub> = C x i x A =	10.07 cfs
Pipe Size (Diameter) =	18 inches
Diameter (D out) =	1.50 ft
Area (A out) =	1.77 ft <sup>2</sup>
Pipe Material =	Concrete
Roughness (n) =	0.013
Hydraulic Radius (R) = D out / 4 =	0.375
Minimum Slope Required	0.92%
$S = \left( \frac{Q_r}{1.486 \times (A_{out}) \times R^{2/3}} \right)^2$	
Design Slope (S) =	0.93%
V = Q <sub>max</sub> / A out =	5.70 ft <sup>3</sup> /sec
V (flowing full) =	5.75 ft <sup>3</sup> /sec
Capacity of Outlet Pipe =	10.16 cfs
Invert out of Primary Overflow =	719.67
Distance from Outlet to Primary Overflow =	177 ft
Pump Station Invert =	718.02

Emergency Overflow Outlet	
Required Capacity (Q <sub>r</sub> ) =	48.15 cfs
Assume Dual Pipe =	24.07 cfs (per pipe)
Assume Pipe Size =	24 inches
Elliptical Equivalent =	24" x 38"
Diameter (D out) =	2.50 ft
Area (A out) =	4.91 ft <sup>2</sup>
Pipe Material =	Concrete
Roughness (n) =	0.013
Hydraulic Radius (R) = D out / 4 =	0.625
Minimum Slope Required (S) =	0.34%
$S = \left( \frac{Q_r}{1.486 \times (A_{out}) \times R^{2/3}} \right)^2$	
Design Slope (S) =	0.52%
V = Q <sub>max</sub> / A out =	4.90 ft <sup>3</sup> /sec
V (flowing full) =	6.05 ft <sup>3</sup> /sec
Outlet Invert =	728.00
Distance from Outlet to Primary Overflow =	191 ft
Outlet Invert =	727.00



**3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 FOR THE LOCATION OF UNDERGROUND UTILITIES.**

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER NOR THE ENGINEER REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

COPYRIGHT © 2006 ATWELL-HICKS  
NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS

CITY FILE: 05-037  
NOT TO BE USED FOR CONSTRUCTION

0500184SP-28-D



**LANDSCAPE NOTES:**

- THIS PLAN IS FOR PLANTING LOCATIONS ONLY.
- SIZES SPECIFIED IN THE PLANT LIST ARE MINIMUM SIZES TO WHICH THE PLANTS ARE TO BE INSTALLED.
- ALL LANDSCAPING SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS STANDARDS AND IN ACCORDANCE WITH CURRENT INDUSTRY STANDARDS IN A NEAT, HEALTHY AND WEED FREE CONDITION.
- THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES. PLANT MATERIAL IS TO BE LOCATED SUCH THAT IT WILL NOT INTERFERE WITH ANY UNDERGROUND OR OVERHEAD UTILITIES.
- PRIOR TO ANY LAND CLEARING OR CONSTRUCTION, TREE PROTECTION FENCING IS TO BE INSTALLED BY THE CONTRACTOR. THIS FENCING SHALL BE INSTALLED AT THE DRIP LINE OF ALL TREES AND SHRUBS AND MUST BE MAINTAINED AS APPROVED FOR THE DURATION OF THE PROJECT. NO CUTTING, FILLING OR TRESPASSING SHALL OCCUR INSIDE THE FENCED AREAS.
- DIG SHRUB PITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALLS. BACKFILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM THE EXCAVATED PLANTING HOLE, AND A FERTILIZER MIX. PLANT TREES AND SHRUBS AT THE SAME GRADE LEVEL AT WHICH THEY WERE PLANTED AT THE NURSERY. IF WET, CLAY SOILS ARE EVIDENT, PLANT TREES AND SHRUBS HIGHER.
- REMOVE ALL TWINE, WIRE AND BURLAP FROM THE TOP 1/3 OF TREE AND SHRUB EARTH BALLS AND FROM TREE TRUNKS.
- LAWN TREES ARE TO BE MULCHED WITH A MINIMUM OF 4" WIDE BY 6" DEEP NATURAL-COLORED SHREDDED HARDWOOD BARK MULCH RINGS.
- SHRUB BEDS ARE TO BE MULCHED WITH SHREDDED BARK MULCH TO A MINIMUM DEPTH OF 3".
- SHRUB BED EDGING SHALL BE 1/8" X 4" INTERLOCKING ALUMINUM EDGE, STAKED WITH METAL STAKES SUFFICIENTLY TO HOLD IN PLACE.
- BACKFILL DIRECTLY BEHIND ALL CURBS AND ALONG SIDEWALKS AND COMPACT TO THE TOP OF CURB OR WALK TO SUPPORT VEHICLE AND PEDESTRIAN WEIGHT WITHOUT SETTLING.
- ALL LANDSCAPE AREAS, ESPECIALLY PARKING LOT ISLANDS AND LANDSCAPE BEDS NEXT TO BUILDINGS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND POOR SOILS TO A DEPTH OF 12-18" AND BACKFILLED WITH GOOD, MEDIUM TEXTURED PLANTING SOIL (LOAM OR LIGHT YELLOW CLAY). ADD 4-6" OF TOPSOIL OVER FILL MATERIAL AND CROWN A MINIMUM OF 6" ABOVE TOP OF CURBS AND/OR WALKS AFTER EARTH SETTLING UNLESS OTHERWISE NOTED ON THE LANDSCAPE PLAN.
- ALL DISTURBED UNPAVED AREAS ARE TO BE SODDED OR SEEDED OVER A MINIMUM OF 4-INCH DEPTH OF TOPSOIL. REFER TO PLAN FOR LOCATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE TO REGRADE, HYDRO-SEED, STRAW, MULCH, AND TACK ALL LAWN AREAS DISTURBED AS THE RESULT OF HIS WORK.
- ANY GROUND MOUNTED MECHANICAL EQUIPMENT SHALL BE SCREENED ON THREE SIDES WITH LIVING PLANT MATERIAL.
- LANDSCAPE BERMS ARE TO BE CONSTRUCTED OF LIGHT YELLOW CLAY OR LOAM SOILS AND ARE TO BE FREE OF CONSTRUCTION MATERIALS AND DEBRIS. USE OF HEAVY CLAYS FOR BERM CONSTRUCTION MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. SLOPES ARE TO BE NO STEEPER THAN 1:3 UNLESS OTHERWISE SPECIFIED ON THE GRADING PLAN.
- EXISTING LAWN FOUND TO BE GENERALLY IN GOOD CONDITION BUT WITH BARE, SPARSE OR WEEDY AREAS MUST BE RENOVATED BY FILLING IN LOW AREAS, RAKING, OVERSEEDING AND TOP DRESSING ALL SPARSE AND BARE SPOTS AND BY INITIATING A WEED AND FEED PROGRAM.
- ALL LANDSCAPE AREAS SHALL BE IRRIGATED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. LAWNS AND SHRUB/LANDSCAPE AREAS SHALL BE WATERED BY SEPARATE ZONES TO MINIMIZE OVERWATERING.
- SEE SHEET SP-31 FOR PLANTING DETAILS.
- ALL LANDSCAPING MUST BE WARRANTED BY THE DEVELOPER FOR A PERIOD OF TWO YEARS FROM THE DATE OF APPROVAL BY THE CITY OF ROCHESTER HILLS LANDSCAPE ARCHITECT.
- ALL DEAD ASH TREES AFFECTED BY THE EMERALD ASH BORER AS WELL AS VIABLE ASH TREES THAT CERTAINLY WILL BE AFFECTED BY THE EMERALD ASH BORER, AND THAT ARE WITHIN ALL NATURAL FEATURES SETBACK AREAS MUST BE CUT DOWN FLUSH TO GRADE (NO STUMP REMOVAL). DISPOSAL PER CITY REQUIREMENTS.
- ANY TEMPORARY IMPACTED NATURAL FEATURE SETBACK AREAS MUST BE RESTORED TO ORIGINAL GRADE WITH ORIGINAL SOILS OR EQUIVALENT SOILS & SEEDED WITH CITY APPROVED SEED MIX WHERE POSSIBLE.

**SITE PLANT SCHEDULE**

REPLACEMENT TREES (R)						TOTAL REPLACEMENT CREDITS
KEY.	QTY.	BOTANICAL/COMMON NAME	SIZE	UNIT COST	TOTAL COST	
PP	12	<i>Picea pungens 'Colorado'</i> Colorado Blue Spruce	14' Ht.	\$650.00	\$7,800.00	24
					<i>Total Cost</i>	

BUFFER TREES, SHRUBS AND GROUND COVER (B)						TOTAL REPLACEMENT CREDITS	
KEY.	QTY.	BOTANICAL/COMMON NAME	SIZE	ROOT	UNIT COST		TOTAL COST
AF	21	<i>Abies fraseri</i> Fraser Fir	14' Ht.	B&B	\$650.00	\$13,650.00	24
AP	18	<i>Acer platanoides 'Columnar'</i> Columnar Norway Maple	3 1/2" Cal.	B&B	\$450.00	\$8,100.00	
BT	51	<i>Berberis thunbergii 'Rose Glow'</i> Rose Glow Barberry	24" Ht.	B&B	\$40.00	\$2,040.00	24
CB	9	<i>Carpinus betulus 'Fastigiata'</i> European Hornbeam	3 1/2" Cal.	B&B	\$450.00	\$4,050.00	
EA	31	<i>Euonymus alatus 'Compactus'</i> Dwarf Burning Bush	30" Ht.	B&B	\$50.00	\$1,550.00	24
GT	27	<i>Gleditsia triacanthos inermis 'Skyline'</i> Thornless Honeylocust	3 1/2" Cal.	B&B	\$450.00	\$12,150.00	
HR	89	<i>Hosta 'Royal Standard'</i> Royal Standard Hosta	3 Gal.	Cont.	\$15.00	\$1,335.00	24
HS	64	<i>Hemerocallis 'Stella D'oro'</i> Stella D'oro Daylily	3 Gal.	Cont.	\$15.00	\$960.00	
JC	60	<i>Juniperus chinensis 'Sea Green'</i> Sea Green Juniper	36" Ht.	Cont.	\$40.00	\$2,400.00	24
JS	56	<i>Juniperus sabinna 'Broadmoor'</i> Broadmoor Juniper	24" Ht.	Cont.	\$40.00	\$2,240.00	
PO	42	<i>Picea omorika</i> Serbian Spruce	14' Ht.	B&B	\$650.00	\$27,300.00	24
PP	16	<i>Picea pungens 'Colorado'</i> Colorado Blue Spruce	14' Ht.	B&B	\$650.00	\$10,400.00	
SP	34	<i>Syringa patula 'Miss Kim'</i> Miss Kim Lilac	30" Ht.	B&B	\$50.00	\$1,700.00	24
TA	60	<i>Tilia cordata 'Greenspire'</i> Greenspire Linden	3 1/2" Cal.	B&B	\$450.00	\$27,000.00	
TM	150	<i>Taxus x media 'Densiflora'</i> Dense Yew	30" Ht.	B&B	\$75.00	\$11,250.00	24
VC	63	<i>Viburnum carlesi</i> Koreanspice Viburnum	36" Ht.	B&B	\$65.00	\$4,095.00	
					<i>Total Cost</i>	<i>\$130,220.00</i>	

PARKING LOT ISLAND TREES (I)						
KEY.	QTY.	BOTANICAL/COMMON NAME	SIZE	ROOT	UNIT COST	TOTAL COST
GT	41	<i>Gleditsia triacanthos inermis 'Skyline'</i> Thornless Honeylocust	3" Cal.	B&B	\$425.00	\$17,425.00
					<i>Total Cost</i>	<i>\$17,425.00</i>

ADDITIONAL LANDSCAPING			
QTY.	ITEM	UNIT COST	TOTAL COST
12,880 SY	CLASS 'A' SOD	\$4.00 SY	\$51,520.00
108 CY	SHREDDED BARK MULCH	\$44.00 CY	\$4,752.00
610 LF	RYERSON STEEL EDGING	\$7.00 LF	\$4,270.00
15,491 SY	HYDRONMULCH	\$1.50 SY	\$23,236.50
11,592 SY	LAWN SEED MIX	\$1.50 SY	\$17,388.00
		<i>Total Cost</i>	<i>\$101,166.50</i>

GRAND TOTAL OF ALL LANDSCAPING COSTS	
REPLACEMENT TREES	\$7,800.00
BUFFER TREES, SHRUBS AND GROUND COVER	\$130,220.00
PARKING LOT ISLAND TREES	\$17,425.00
ADDITIONAL LANDSCAPING	\$101,166.50
<i>Grand Total</i>	<i>\$256,611.50</i>

**SITE LANDSCAPE REQUIREMENTS**

PARKING LOT LANDSCAPING

LANDSCAPE ISLANDS SHALL BE PROVIDED AT A RATIO OF AT LEAST 150 SQUARE FEET OF ISLAND FOR EVERY TEN PARKING SPACES.

588 PARKING SPACES PROVIDED. 588/10 = 59  
59 X 150 = 8,850 S.F. REQUIRED  
8,850 S.F. / 300 S.F. = 30 ISLAND TREES REQUIRED

LANDSCAPE ISLAND AREA REQUIRED: 8,850 SF  
LANDSCAPE ISLAND AREA PROVIDED: 8,901.65 SF

ONE TREE IS REQUIRED PER PARKING ISLAND.

PARKING ISLAND TREES REQUIRED: 30  
PARKING ISLAND TREES PROVIDED: 41

**LEGEND**

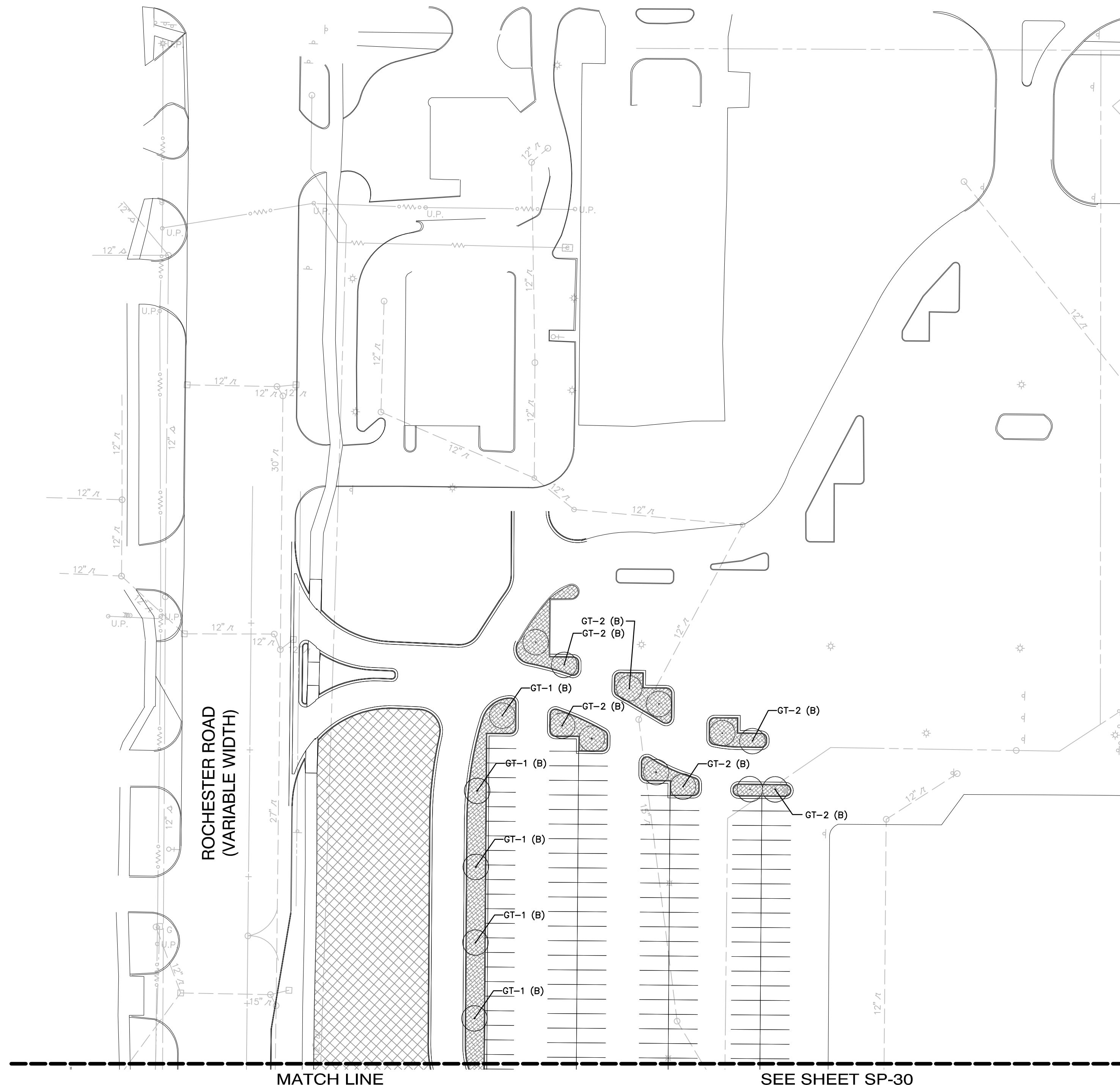
PROPERTY LINE  
EXIST. STORM SEWER  
PROP. STORM SEWER  
EXIST. MANHOLE  
PROP. MANHOLE  
PROP. EDGE DRAIN  
EXIST. CATCH BASIN/INLET  
PROP. CATCH BASIN/INLET  
END SECTION/HEAD WALL  
EXIST. SANITARY SEWER  
PROP. SANITARY SEWER  
EXIST. CLEAN OUT  
PROP. CLEAN OUT  
EXIST. WATER MAIN  
PROP. WATER MAIN  
EXIST. HYDRANT  
PROP. HYDRANT  
EXIST. GATE VALVE IN MANHOLE  
PROP. GATE VALVE IN MANHOLE  
EXIST. OVERHEAD ELECTRIC  
PROP. UNDERGROUND ELECTRIC  
EXIST. UNDERGROUND ELECTRIC  
PROP. UNDERGROUND ELECTRIC  
EXIST. LIGHT POLE  
EXIST. UTILITY POLE  
GUY WIRE  
EXIST. ELECTRIC TRANSFORMER  
EXIST. OVERHEAD TELEPHONE  
EXIST. UNDERGROUND TELEPHONE  
PROP. UNDERGROUND TELEPHONE  
EXIST. GAS  
PROP. GAS  
EXIST. GAS RISER  
EXIST. TELEPHONE RISER  
FENCE  
EXIST. SIGN  
AREA TO BE SODDED WITH CLASS 'A' MOOT RATED SOD  
AREA TO BE MULCHED WITH SHREDDED HARDWOOD BARK

3 WORKING DAYS  
BEFORE YOU DIG  
CALL MISS DIG  
1-800-482-7171  
FOR THE LOCATION OF UNDERGROUND FACILITIES

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

COPYRIGHT © 2006 ATWELL-HICKS  
NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS



**REVISIONS**

DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

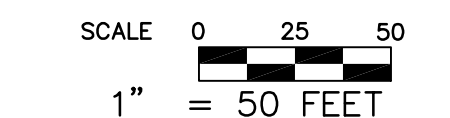
**ATWELL-HICKS**  
Engineering • Surveying • Planning  
Environmental • Water/Wastewater  
8 6 6 8 5 0 4 2 0 0  
www.atwell-hicks.com  
MICHIGAN ILLINOIS OHIO FLORIDA

**LOWE'S HOME CENTERS, INC.**  
1605 CURTIS BRIDGE ROAD  
REC DOCK  
WILKESBORO, NC 28697  
336.658.4000 (V) 336.658.3257 (F)  
THIS DRAWING IS THE PROPERTY OF LOWE'S HOME CENTERS, INC. ANY USE OR REPRODUCTION IN WHOLE OR PART IS PROHIBITED WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOWE'S HOME CENTERS, INC. COPYRIGHT 2006 ALL RIGHTS RESERVED.

SITE PLAN  
LANDSCAPE PLAN  
LOWE'S OF  
ROCHESTER HILLS  
OAKLAND COUNTY, MICHIGAN  
PROJECT No. 0500184 | DRAWN BY: JRT | CHECKED BY: DL

ORIGINAL ISSUE DATE: 10/18/2005  
PERMIT SET ISSUE DATE:  
CONSTRUCTION SET ISSUE DATE:  
DRAWING NUMBER:  
SP-29  
4102-50-29

CITY FILE: 05-037  
NOT TO BE USED FOR CONSTRUCTION



K:\0500184\sp\Plan\_Site\Site\Primary\As\_Submitted\0506-09-06-APPROVED BY CITY OF ROCHESTER HILLS PLANNING COMMISSION\0500184SP-29.dwg, 08/20/06 2:38:22 PM, entbl



**LANDSCAPE NOTES:**

- THIS PLAN IS FOR PLANTING LOCATIONS ONLY.
- SIZES SPECIFIED IN THE PLANT LIST ARE MINIMUM SIZES TO WHICH THE PLANTS ARE TO BE INSTALLED.
- ALL LANDSCAPING SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS STANDARDS AND IN ACCORDANCE WITH CURRENT INDUSTRY STANDARDS IN A NEAT, HEALTHY AND WEED FREE CONDITION.
- THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES. PLANT MATERIAL IS TO BE LOCATED SUCH THAT IT WILL NOT INTERFERE WITH ANY UNDERGROUND OR OVERHEAD UTILITIES.
- PRIOR TO ANY LAND CLEARING OR CONSTRUCTION, TREE PROTECTION FENCING IS TO BE INSTALLED BY THE CONTRACTOR. THIS FENCING SHALL BE INSTALLED AT THE DRIP LINE OF ALL TREES AND SHRUBS AND MUST BE MAINTAINED AS APPROVED FOR THE DURATION OF THE PROJECT. NO CUTTING, FILLING OR TRESPASSING SHALL OCCUR INSIDE THE FENCED AREAS.
- DIG SHRUB FITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE FITS 2' LARGER THAN ROOT BALLS. BACKFILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM THE EXCAVATED PLANTING HOLE, AND A FERTILIZER MIX. PLANT TREES AND SHRUBS AT THE SAME GRADE LEVEL AT WHICH THEY WERE PLANTED AT THE NURSERY. IF WET, CLAY SOILS ARE EVIDENT, PLANT TREES AND SHRUBS HIGHER.
- REMOVE ALL TWINE, WIRE AND BURLAP FROM THE TOP 1/3 OF TREE AND SHRUB EARTH BALLS AND FROM TREE TRUNKS.
- LAWN TREES ARE TO BE MULCHED WITH A MINIMUM OF 4" WIDE BY 6" DEEP NATURAL-COLORED SHREDDED HARDWOOD BARK MULCH RINGS.
- SHRUB BEDS ARE TO BE MULCHED WITH SHREDDED BARK MULCH TO A MINIMUM DEPTH OF 3".
- SHRUB BED EDGING SHALL BE 1/8" X 4" INTERLOCKING ALUMINUM EDGE, STAKED WITH METAL STAKES SUFFICIENTLY TO HOLD IN PLACE.
- BACKFILL DIRECTLY BEHIND ALL CURBS AND ALONG SIDEWALKS AND COMPACT TO THE TOP OF CURB OR WALK TO SUPPORT VEHICLE AND PEDESTRIAN WEIGHT WITHOUT SETTLING.
- ALL LANDSCAPE AREAS, ESPECIALLY PARKING LOT ISLANDS AND LANDSCAPE BEDS NEXT TO BUILDINGS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND POOR SOILS TO A DEPTH OF 12-18" AND BACKFILLED WITH GOOD, MEDIUM TEXTURED PLANTING SOIL (LOAM OR LIGHT YELLOW CLAY). ADD 4-6" OF TOPSOIL OVER FILL MATERIAL AND CROWN A MINIMUM OF 6" ABOVE TOP OF CURBS AND/OR WALKS AFTER EARTH SETTLING UNLESS OTHERWISE NOTED ON THE LANDSCAPE PLAN.
- ALL DISTURBED UNPAVED AREAS ARE TO BE SODDED OR SEEDED OVER A MINIMUM OF 4-INCH DEPTH OF TOPSOIL. REFER TO PLAN FOR LOCATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE TO REGRADE, HYDRO-SEED, STRAW, MULCH, AND TACK ALL LAWN AREAS DISTURBED AS THE RESULT OF HIS WORK.
- ANY GROUND MOUNTED MECHANICAL EQUIPMENT SHALL BE SCREENED ON THREE SIDES WITH LIVING PLANT MATERIAL.
- LANDSCAPE BERMS ARE TO BE CONSTRUCTED OF LIGHT YELLOW CLAY OR LOAM SOILS AND ARE TO BE FREE OF CONSTRUCTION MATERIALS AND DEBRIS. USE OF HEAVY CLAYS FOR BERM CONSTRUCTION MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. SLOPES ARE TO BE NO STEEPER THAN 1:3 UNLESS OTHERWISE SPECIFIED ON THE GRADING PLAN.
- EXISTING LAWN FOUND TO BE GENERALLY IN GOOD CONDITION BUT WITH BARE, SPARSE OR WEEDY AREAS MUST BE RENOVATED BY FILLING IN LOW AREAS, RAKING, OVERSEEDING AND TOP DRESSING ALL SPARSE AND BARE SPOTS AND BY INITIATING A WEED AND FEED PROGRAM.
- ALL LANDSCAPE AREAS SHALL BE IRRIGATED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. LAWNS AND SHRUB/LANDSCAPE AREAS SHALL BE WATERED BY SEPARATE ZONES TO MINIMIZE OVERWATERING.
- SEE SHEET SP-31 FOR PLANTING DETAILS.
- ALL LANDSCAPING MUST BE WARRANTED BY THE DEVELOPER FOR A PERIOD OF TWO YEARS FROM THE DATE OF APPROVAL BY THE CITY OF ROCHESTER HILLS LANDSCAPE ARCHITECT.
- ALL DEAD ASH TREES AFFECTED BY THE EMERALD ASH BORER AS WELL AS VIBURNUM ASH TREES THAT CERTAINLY WILL BE AFFECTED BY THE EMERALD ASH BORER, AND THAT ARE WITHIN ALL NATURAL FEATURES SETBACK AREAS MUST BE CUT DOWN FLUSH TO GRADE (NO STUMP REMOVAL). DISPOSAL PER CITY REQUIREMENTS.
- ANY TEMPORARY IMPACTED NATURAL FEATURE SETBACK AREAS MUST BE RESTORED TO ORIGINAL GRADE WITH ORIGINAL SOILS OR EQUIVALENT SOILS & SEEDED WITH CITY APPROVED SEED MIX WHERE POSSIBLE.

**SITE PLANT SCHEDULE**

REPLACEMENT TREES (R)						
KEY	QTY.	BOTANICAL/COMMON NAME	SIZE	UNIT COST	TOTAL COST	
PP	12	<i>Picea pungens</i> 'Colorado' Colorado Blue Spruce	14' Ht.	\$650.00	\$7,800.00	
				<b>Total Cost</b>	<b>\$7,800.00</b>	
BUFFER TREES, SHRUBS AND GROUND COVER (B)						
KEY	QTY.	BOTANICAL/COMMON NAME	SIZE	ROOT	UNIT COST	TOTAL COST
AF	21	<i>Abies fraseri</i> Fraser Fir	14' Ht.	B&B	\$650.00	\$13,650.00
AP	18	<i>Acer platanoides</i> 'Columnar' Columnar Norway Maple	3 1/2" Cal.	B&B	\$450.00	\$8,100.00
BT	51	<i>Berberis thunbergii</i> 'Rose Glow' Rose Glow Barberry	24" Ht.	B&B	\$40.00	\$2,040.00
CB	9	<i>Carpinus betulus</i> 'Fastigiata' European Hornbeam	3 1/2" Cal.	B&B	\$450.00	\$4,050.00
EA	31	<i>Euonymus alatus</i> 'Compactus' Dwarf Burning Bush	30" Ht.	B&B	\$50.00	\$1,550.00
GT	27	<i>Gleditsia triacanthos inermis</i> 'Skyline' Thornless Honeylocust	3 1/2" Cal.	B&B	\$450.00	\$12,150.00
HR	89	<i>Hosta</i> 'Royal Standard' Royal Standard Hosta	3 Gal.	Cont.	\$15.00	\$1,335.00
HS	64	<i>Hemerocallis</i> 'Stella D'oro' Stella D'oro Daylily	3 Gal.	Cont.	\$15.00	\$960.00
JC	60	<i>Juniperus chinensis</i> 'Sea Green' Sea Green Juniper	36" Ht.	Cont.	\$40.00	\$2,400.00
JS	56	<i>Juniperus sabina</i> 'Broadmoor' Broadmoor Juniper	24" Ht.	Cont.	\$40.00	\$2,240.00
PO	42	<i>Picea omorika</i> Serbian Spruce	14' Ht.	B&B	\$650.00	\$27,300.00
PP	16	<i>Picea pungens</i> 'Colorado' Colorado Blue Spruce	14' Ht.	B&B	\$650.00	\$10,400.00
SP	34	<i>Syringa patula</i> 'Miss Kim' Miss Kim Lilac	30" Ht.	B&B	\$50.00	\$1,700.00
TA	60	<i>Tilia cordata</i> 'Greenspire' Greenspire Linden	3 1/2" Cal.	B&B	\$450.00	\$27,000.00
TM	150	<i>Taxus x media</i> 'Densiflora' Dense Yew	30" Ht.	B&B	\$75.00	\$11,250.00
VC	63	<i>Viburnum carlesii</i> Koreanspice Viburnum	36" Ht.	B&B	\$65.00	\$4,095.00
				<b>Total Cost</b>	<b>\$130,220.00</b>	
PARKING LOT ISLAND TREES (I)						
KEY	QTY.	BOTANICAL/COMMON NAME	SIZE	ROOT	UNIT COST	TOTAL COST
GT	41	<i>Gleditsia triacanthos inermis</i> 'Skyline' Thornless Honeylocust	3" Cal.	B&B	\$425.00	\$17,425.00
				<b>Total Cost</b>	<b>\$17,425.00</b>	
ADDITIONAL LANDSCAPING						
QTY.	ITEM	UNIT COST	TOTAL COST			
12,880 SY	CLASS 'A' SOD	\$4.00 SY	\$51,520.00			
108 CY	SHREDDED BARK MULCH	\$44.00 CY	\$4,752.00			
610 LF	RYERSON STEEL EDGING	\$7.00 LF	\$4,270.00			
15,491 SY	HYDROMULCH	\$1.50 SY	\$23,236.50			
11,592 SY	LAWN SEED MIX	\$1.50 SY	\$17,388.00			
		<b>Total Cost</b>	<b>\$101,166.50</b>			
GRAND TOTAL OF ALL LANDSCAPING COSTS						
REPLACEMENT TREES	\$7,800.00					
BUFFER TREES, SHRUBS AND GROUND COVER	\$130,220.00					
PARKING LOT ISLAND TREES	\$17,425.00					
ADDITIONAL LANDSCAPING	\$101,166.50					
<b>Grand Total</b>	<b>\$256,611.50</b>					

**SITE LANDSCAPE REQUIREMENTS**

**PARKING LOT LANDSCAPING**

LANDSCAPE ISLANDS SHALL BE PROVIDED AT A RATIO OF AT LEAST 150 SQUARE FEET OF ISLAND FOR EVERY TEN PARKING SPACES.

588 PARKING SPACES PROVIDED. 588/10 = 59  
59 X 150 = 8,850 S.F. REQUIRED  
8,850 S.F. / 300 S.F. = 30 ISLAND TREES REQUIRED

LANDSCAPE ISLAND AREA REQUIRED: 8,850 SF  
LANDSCAPE ISLAND AREA PROVIDED: 8,901.65 SF

ONE TREE IS REQUIRED PER PARKING ISLAND.

PARKING ISLAND TREES REQUIRED: 30  
PARKING ISLAND TREES PROVIDED: 41

**LEGEND**

- PROPERTY LINE
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. MANHOLE
- PROP. MANHOLE
- PROP. EDGE DRAIN
- EXIST. CATCH BASIN/INLET
- PROP. CATCH BASIN/INLET
- END SECTION/HEAD WALL
- CULVERT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEAN OUT
- PROP. CLEAN OUT
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN MANHOLE
- PROP. GATE VALVE IN MANHOLE
- EXIST. OVERHEAD ELECTRIC
- PROP. OVERHEAD ELECTRIC
- EXIST. UNDERGROUND ELECTRIC
- PROP. UNDERGROUND ELECTRIC
- EXIST. LIGHT POLE
- PROP. LIGHT POLE
- EXIST. UTILITY POLE
- PROP. UTILITY POLE
- EXIST. GUY WIRE
- PROP. GUY WIRE
- EXIST. ELECTRIC TRANSFORMER
- PROP. ELECTRIC TRANSFORMER
- EXIST. OVERHEAD TELEPHONE
- PROP. OVERHEAD TELEPHONE
- EXIST. UNDERGROUND TELEPHONE
- PROP. UNDERGROUND TELEPHONE
- EXIST. GAS
- PROP. GAS
- EXIST. GAS RISER
- PROP. GAS RISER
- EXIST. TELEPHONE RISER
- PROP. TELEPHONE RISER
- EXIST. SIGN
- PROP. SIGN
- EXIST. DECIDUOUS TREE
- PROP. DECIDUOUS TREE
- EXIST. EVERGREEN TREE
- PROP. EVERGREEN TREE
- TREE PROTECTION FENCING
- PROP. LIGHT POLE
- AREA TO BE SODDED WITH CLASS 'A' MDT RATED SOD
- AREA TO BE MULCHED WITH SHREDDED HARDWOOD BARK



FOR THE LOCATION OF UNDERGROUND FACILITIES

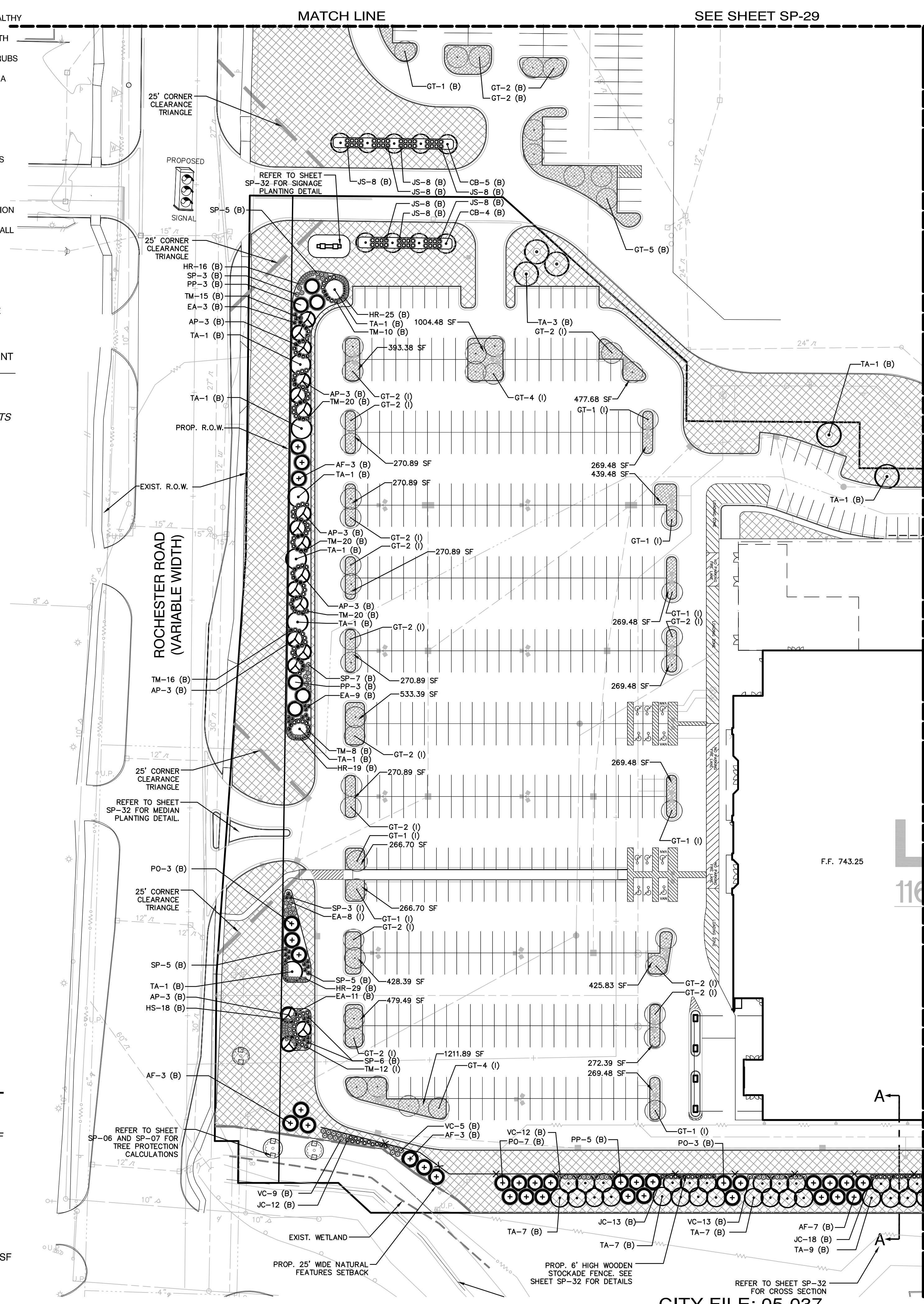
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR THE SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

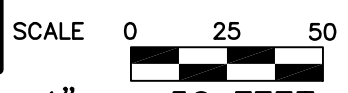
COPYRIGHT © 2006 ATWELL-HICKS  
NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS

K:\0500184\wp\Plan\_Series\Site\Primary\As\_Bid\0500184SP-30.dwg, APPROVED BY CITY OF ROCHESTER HILLS PLANNING COMMISSION\0500184SP-30.dwg, 08/20/06 2:36:40 PM, enthr



SEE SHEET SP-31

MATCH LINE



CITY FILE: 05-037  
NOT TO BE USED FOR CONSTRUCTION

**REVISIONS**

DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
Engineering • Surveying • Planning  
Environmental • Water/Wastewater

8 6 6 8 5 0 4 2 0 0  
www.atwell-hicks.com

MICHIGAN ILLINOIS OHIO FLORIDA

**LOWE'S HOME CENTERS, INC.**

1605 CURTIS BRIDGE ROAD  
REC DOCK  
WILKESBORO, NC 28697  
336.658.4000 (V) 336.658.3257 (F)

THIS DRAWING IS THE PROPERTY OF LOWE'S HOME CENTERS, INC. ANY USE OR REPRODUCTION IN WHOLE OR PART IS PROHIBITED WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOWE'S HOME CENTERS, INC. COPYRIGHT 2006 ALL RIGHTS RESERVED.

**LOWE'S**

SITE PLAN  
LANDSCAPE PLAN

LOWE'S OF  
ROCHESTER HILLS  
OAKLAND COUNTY, MICHIGAN

PROJECT No: 0500184 | DRAWN BY: JRT | CHECKED BY: DL

ORIGINAL  
ISSUE DATE: 10/18/2005

PERMIT SET  
ISSUE DATE:

CONSTRUCTION SET  
ISSUE DATE:

DRAWING NUMBER:  
**SP-30**  
4102-50-30



**LANDSCAPE NOTES:**

- THIS PLAN IS FOR PLANTING LOCATIONS ONLY.
- SIZES SPECIFIED IN THE PLANT LIST ARE MINIMUM SIZES TO WHICH THE PLANTS ARE TO BE INSTALLED.
- ALL LANDSCAPING SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS STANDARDS AND IN ACCORDANCE WITH CURRENT INDUSTRY STANDARDS IN A NEAT, HEALTHY AND WEED FREE CONDITION.
- THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES. PLANT MATERIAL IS TO BE LOCATED SUCH THAT IT WILL NOT INTERFERE WITH ANY UNDERGROUND OR OVERHEAD UTILITIES.
- PRIOR TO ANY LAND CLEARING OR CONSTRUCTION, TREE PROTECTION FENCING IS TO BE INSTALLED BY THE CONTRACTOR. THIS FENCING SHALL BE INSTALLED AT THE DRIP LINE OF ALL TREES AND SHRUBS AND MUST BE MAINTAINED AS APPROVED FOR THE DURATION OF THE PROJECT. NO CUTTING, FILLING OR TRESPASSING SHALL OCCUR INSIDE THE FENCED AREAS.
- DIG SHRUB PITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALLS. BACKFILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM THE EXCAVATED PLANTING HOLE, AND A FERTILIZER MIX. PLANT TREES AND SHRUBS AT THE SAME GRADE LEVEL AT WHICH THEY WERE PLANTED AT THE NURSERY. IF WET, CLAY SOILS ARE EVIDENT, PLANT TREES AND SHRUBS HIGHER.
- REMOVE ALL TWINE, WIRE AND BURLAP FROM THE TOP 1/3 OF TREE AND SHRUB EARTH BALLS AND FROM TREE TRUNKS.
- LAWN TREES ARE TO BE MULCHED WITH A MINIMUM OF 4" WIDE BY 6" DEEP NATURAL-COLORED SHREDDED HARDWOOD BARK MULCH RINGS.
- SHRUB BEDS ARE TO BE MULCHED WITH SHREDDED BARK MULCH TO A MINIMUM DEPTH OF 3".
- SHRUB BED EDGING SHALL BE 1/8" X 4" INTERLOCKING ALUMINUM EDGE, STAKED WITH METAL STAKES SUFFICIENTLY TO HOLD IN PLACE.
- BACKFILL DIRECTLY BEHIND ALL CURBS AND ALONG SIDEWALKS AND COMPACT TO THE TOP OF CURB OR WALK TO SUPPORT VEHICLE AND PEDESTRIAN WEIGHT WITHOUT SETTLING.
- ALL LANDSCAPE AREAS, ESPECIALLY PARKING LOT ISLANDS AND LANDSCAPE BEDS NEXT TO BUILDINGS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND POOR SOILS TO A DEPTH OF 12-18" AND BACKFILLED WITH GOOD, MEDIUM TEXTURED PLANTING SOIL (LOAM OR LIGHT YELLOW CLAY). ADD 4-6" OF TOPSOIL OVER FILL MATERIAL AND CROWN A MINIMUM OF 6" ABOVE TOP OF CURBS AND/OR WALKS AFTER EARTH SETTLING UNLESS OTHERWISE NOTED ON THE LANDSCAPE PLAN.
- ALL DISTURBED UNPAVED AREAS ARE TO BE SODDED OR SEEDED OVER A MINIMUM OF 4-INCH DEPTH OF TOPSOIL. REFER TO PLAN FOR LOCATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE TO REGRADE, HYDRO-SEED, STRAW, MULCH, AND TACK ALL LAWN AREAS DISTURBED AS THE RESULT OF HIS WORK.
- ANY GROUND MOUNTED MECHANICAL EQUIPMENT SHALL BE SCREENED ON THREE SIDES WITH LIVING PLANT MATERIAL.
- LANDSCAPE BERMS ARE TO BE CONSTRUCTED OF LIGHT YELLOW CLAY OR LOAM SOILS AND ARE TO BE FREE OF CONSTRUCTION MATERIALS AND DEBRIS. USE OF HEAVY CLAYS FOR BERM CONSTRUCTION MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. SLOPES ARE TO BE NO STEEPER THAN 1:3 UNLESS OTHERWISE SPECIFIED ON THE GRADING PLAN.
- EXISTING LAWN FOUND TO BE GENERALLY IN GOOD CONDITION BUT WITH BARE, SPARSE OR WEEDY AREAS MUST BE RENOVATED BY FILLING IN LOW AREAS, RAKING, OVERSEEDING AND TOP DRESSING ALL SPARSE AND BARE SPOTS AND BY INITIATING A WEED AND FEED PROGRAM.
- ALL LANDSCAPE AREAS SHALL BE IRRIGATED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. LAWNS AND SHRUB/LANDSCAPE AREAS SHALL BE WATERED BY SEPARATE ZONES TO MINIMIZE OVERWATERING.
- SEE SHEET SP-31 FOR PLANTING DETAILS.
- ALL LANDSCAPING MUST BE WARRANTED BY THE DEVELOPER FOR A PERIOD OF TWO YEARS FROM THE DATE OF APPROVAL BY THE CITY OF ROCHESTER HILLS LANDSCAPE ARCHITECT.
- ALL DEAD ASH TREES AFFECTED BY THE EMERALD ASH BORER AS WELL AS VIBURNUM TREES THAT CERTAINLY WILL BE AFFECTED BY THE EMERALD ASH BORER, AND THAT ARE WITHIN ALL NATURAL FEATURES SETBACK AREAS MUST BE CUT DOWN FLUSH TO GRADE (NO STUMP REMOVAL), DISPOSAL PER CITY REQUIREMENTS.
- ANY TEMPORARY IMPACTED NATURAL FEATURE SETBACK AREAS MUST BE RESTORED TO ORIGINAL GRADE WITH ORIGINAL SOILS OR EQUIVALENT SOILS & SEEDED WITH CITY APPROVED SEED MIX WHERE POSSIBLE.

**SITE PLANT SCHEDULE**

KEY.	QTY.	BOTANICAL/COMMON NAME	SIZE	UNIT COST	TOTAL COST	TOTAL REPLACEMENT CREDITS
PP	12	<i>Picea pungens 'Colorado'</i> Colorado Blue Spruce	14' Ht.	\$650.00	\$7,800.00	24
					<b>Total Cost</b>	<b>24 TOTAL TREE CREDITS</b>

**BUFFER TREES, SHRUBS AND GROUND COVER (B)**

KEY.	QTY.	BOTANICAL/COMMON NAME	SIZE	ROOT	UNIT COST	TOTAL COST
AF	21	<i>Abies fraseri</i> Fraser Fir	14' Ht.	B&B	\$650.00	\$13,650.00
AP	18	<i>Acer platanoides 'Columnar'</i> Columnar Norway Maple	3 1/2" Cal.	B&B	\$450.00	\$8,100.00
BT	51	<i>Berberis thunbergii 'Rose Glow'</i> Rose Glow Barberry	24" Ht.	B&B	\$40.00	\$2,040.00
CB	9	<i>Carpinus betulus 'Fastigiata'</i> European Hornbeam	3 1/2" Cal.	B&B	\$450.00	\$4,050.00
EA	31	<i>Euonymus alatus 'Compactus'</i> Dwarf Burning Bush	30" Ht.	B&B	\$50.00	\$1,550.00
GT	27	<i>Gleditsia triacanthos inermis 'Skyline'</i> Thornless Honeylocust	3 1/2" Cal.	B&B	\$450.00	\$12,150.00
HR	89	<i>Hosta 'Royal Standard'</i> Royal Standard Hosta	3 Gal.	Cont.	\$15.00	\$1,335.00
HS	64	<i>Hemerocallis 'Stella D'oro'</i> Stella D'oro Daylily	3 Gal.	Cont.	\$15.00	\$960.00
JC	60	<i>Juniperus chinensis 'Sea Green'</i> Sea Green Juniper	36" Ht.	Cont.	\$40.00	\$2,400.00
JS	56	<i>Juniperus sabina 'Broadmoor'</i> Broadmoor Juniper	24" Ht.	Cont.	\$40.00	\$2,240.00
PO	42	<i>Picea omorika</i> Serbian Spruce	14' Ht.	B&B	\$650.00	\$27,300.00
PP	16	<i>Picea pungens 'Colorado'</i> Colorado Blue Spruce	14' Ht.	B&B	\$650.00	\$10,400.00
SP	34	<i>Syringa patula 'Miss Kim'</i> Miss Kim Lilac	30" Ht.	B&B	\$50.00	\$1,700.00
TA	60	<i>Tilia cordata 'Greenspire'</i> Greenspire Linden	3 1/2" Cal.	B&B	\$450.00	\$27,000.00
TM	150	<i>Taxus x media 'Densiflora'</i> Dense Yew	30" Ht.	B&B	\$75.00	\$11,250.00
VC	63	<i>Viburnum carlesii</i> Koreanspice Viburnum	36" Ht.	B&B	\$65.00	\$4,095.00
					<b>Total Cost</b>	<b>\$130,220.00</b>

**PARKING LOT ISLAND TREES (I)**

KEY.	QTY.	BOTANICAL/COMMON NAME	SIZE	ROOT	UNIT COST	TOTAL COST
GT	41	<i>Gleditsia triacanthos inermis 'Skyline'</i> Thornless Honeylocust	3" Cal.	B&B	\$425.00	\$17,425.00
					<b>Total Cost</b>	<b>\$17,425.00</b>

**ADDITIONAL LANDSCAPING**

QTY.	ITEM	UNIT COST	TOTAL COST
12,880 SY	CLASS 'A' SOD	\$4.00 SY	\$51,520.00
108 CY	SHREDDED BARK MULCH	\$44.00 CY	\$4,752.00
610 LF	RYERSON STEEL EDGING	\$7.00 LF	\$4,270.00
15,491 SY	HYDROMULCH	\$1.50 SY	\$23,236.50
11,592 SY	LAWN SEED MIX	\$1.50 SY	\$17,388.00
		<b>Total Cost</b>	<b>\$101,166.50</b>

**GRAND TOTAL OF ALL LANDSCAPING COSTS**

REPLACEMENT TREES	\$7,800.00
BUFFER TREES, SHRUBS AND GROUND COVER	\$130,220.00
PARKING LOT ISLAND TREES	\$17,425.00
ADDITIONAL LANDSCAPING	\$101,166.50
<b>Grand Total</b>	<b>\$256,611.50</b>

**SITE LANDSCAPE REQUIREMENTS**

**PARKING LOT LANDSCAPING**

LANDSCAPE ISLANDS SHALL BE PROVIDED AT A RATIO OF AT LEAST 150 SQUARE FEET OF ISLAND FOR EVERY TEN PARKING SPACES.

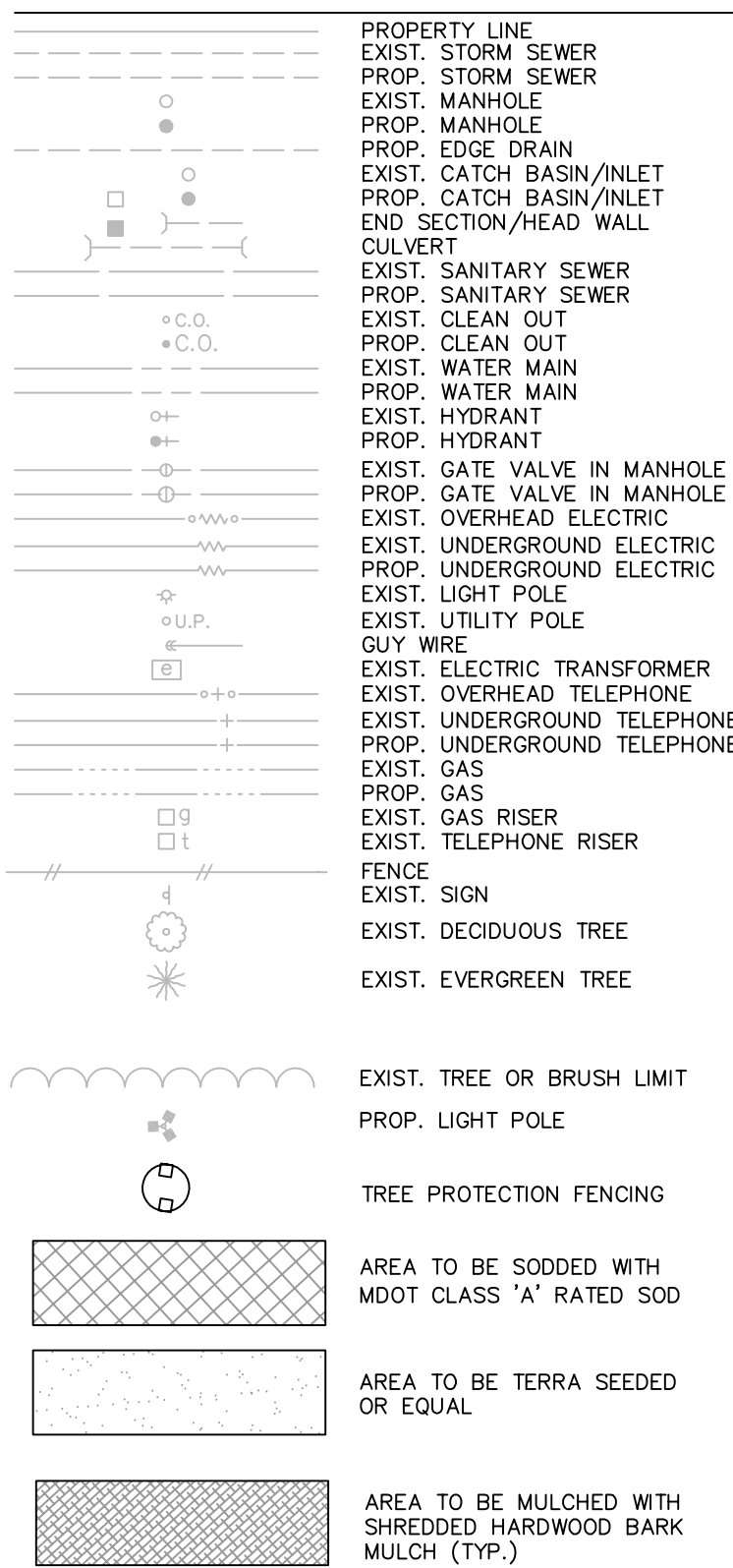
588 PARKING SPACES PROVIDED. 588/10 = 59  
59 X 150 = 8,850 S.F. REQUIRED  
8,850 S.F. / 300 S.F. = 30 ISLAND TREES REQUIRED

LANDSCAPE ISLAND AREA REQUIRED: 8,850 SF  
LANDSCAPE ISLAND AREA PROVIDED: 8,901.65 SF

ONE TREE IS REQUIRED PER PARKING ISLAND.

PARKING ISLAND TREES REQUIRED: 30  
PARKING ISLAND TREES PROVIDED: 41

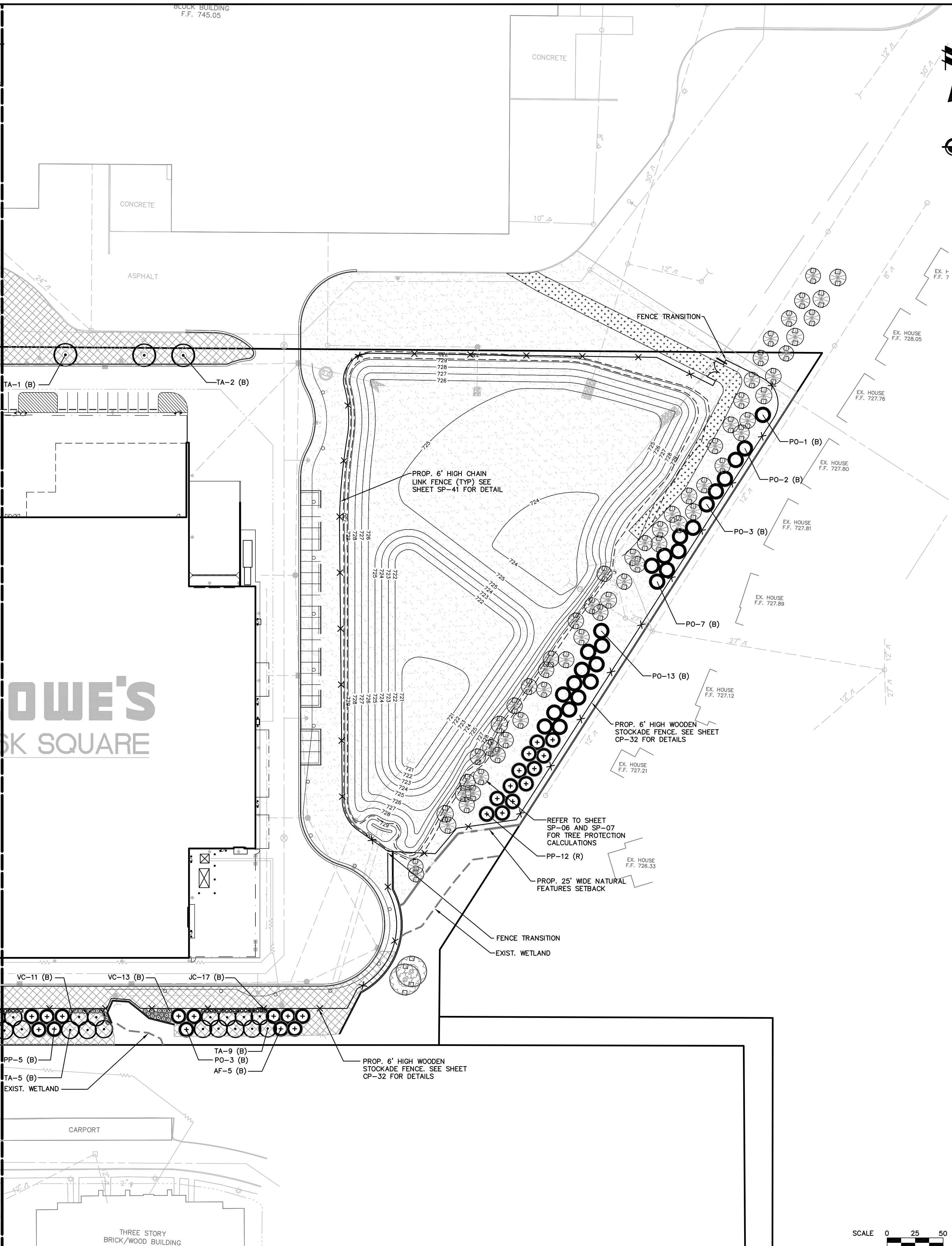
**LEGEND**



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

COPYRIGHT © 2006 ATWELL-HICKS  
NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS

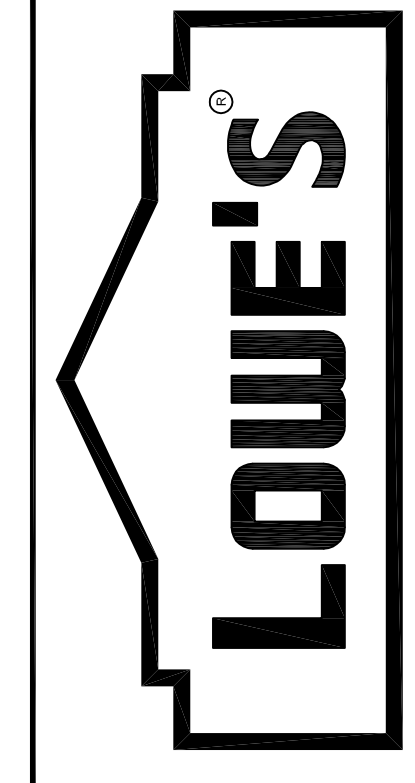


**REVISIONS**

DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
Engineering • Surveying • Planning  
Environmental • Water/Wastewater  
8 6 6 8 5 0 4 2 0 0  
www.atwell-hicks.com  
MICHIGAN ILLINOIS OHIO FLORIDA

**LOWE'S HOME CENTERS, INC.**  
1605 CURTIS BRIDGE ROAD  
REC DOCK  
WILKESBORO, NC 28697  
336.658.4000 (V) 336.658.3257 (F)  
THIS DRAWING IS THE PROPERTY OF LOWE'S HOME CENTERS, INC. ANY USE OR REPRODUCTION IN WHOLE OR PART IS PROHIBITED WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOWE'S HOME CENTERS, INC. COPYRIGHT 2006 ALL RIGHTS RESERVED.



SITE PLAN  
LANDSCAPE PLAN  
LOWE'S OF  
ROCHESTER HILLS  
OAKLAND COUNTY, MICHIGAN  
PROJECT No. 05000184 | DRAWN BY: JRT | CHECKED BY: DL

ORIGINAL ISSUE DATE: 10/18/2005  
PERMIT SET ISSUE DATE:  
CONSTRUCTION SET ISSUE DATE:  
DRAWING NUMBER:

SP-31  
4102-50-31

CITY FILE: 05-037  
NOT TO BE USED FOR CONSTRUCTION



K:\05000184\wp\Plan\_Series\SitePlan\Primary\As\_Submitted\05000184SP-31.dwg, 08/20/06 2:37:04 PM, entbkr



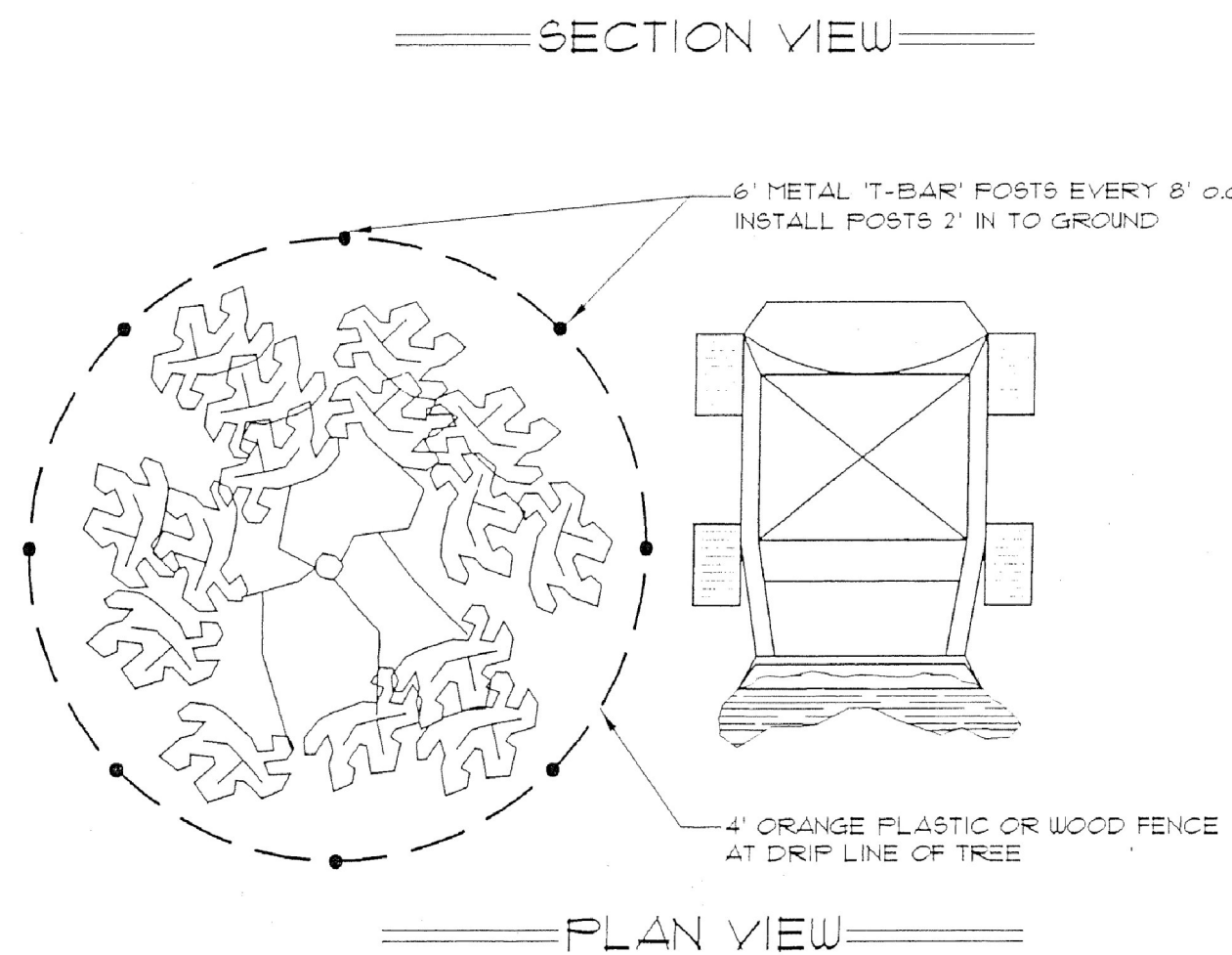
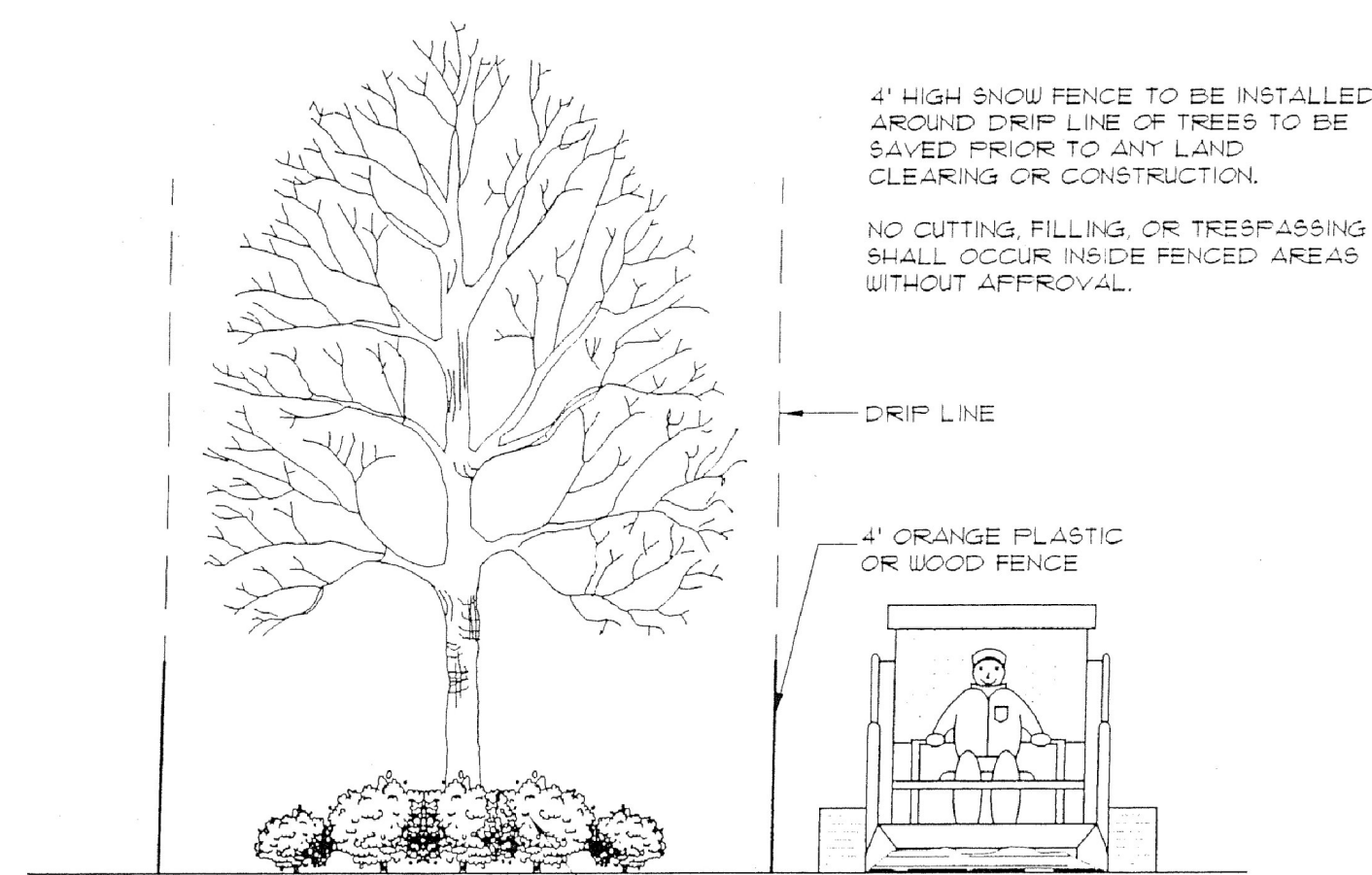
CITY OF ROCHESTER HILLS LANDSCAPE NOTES

Landscape Notes

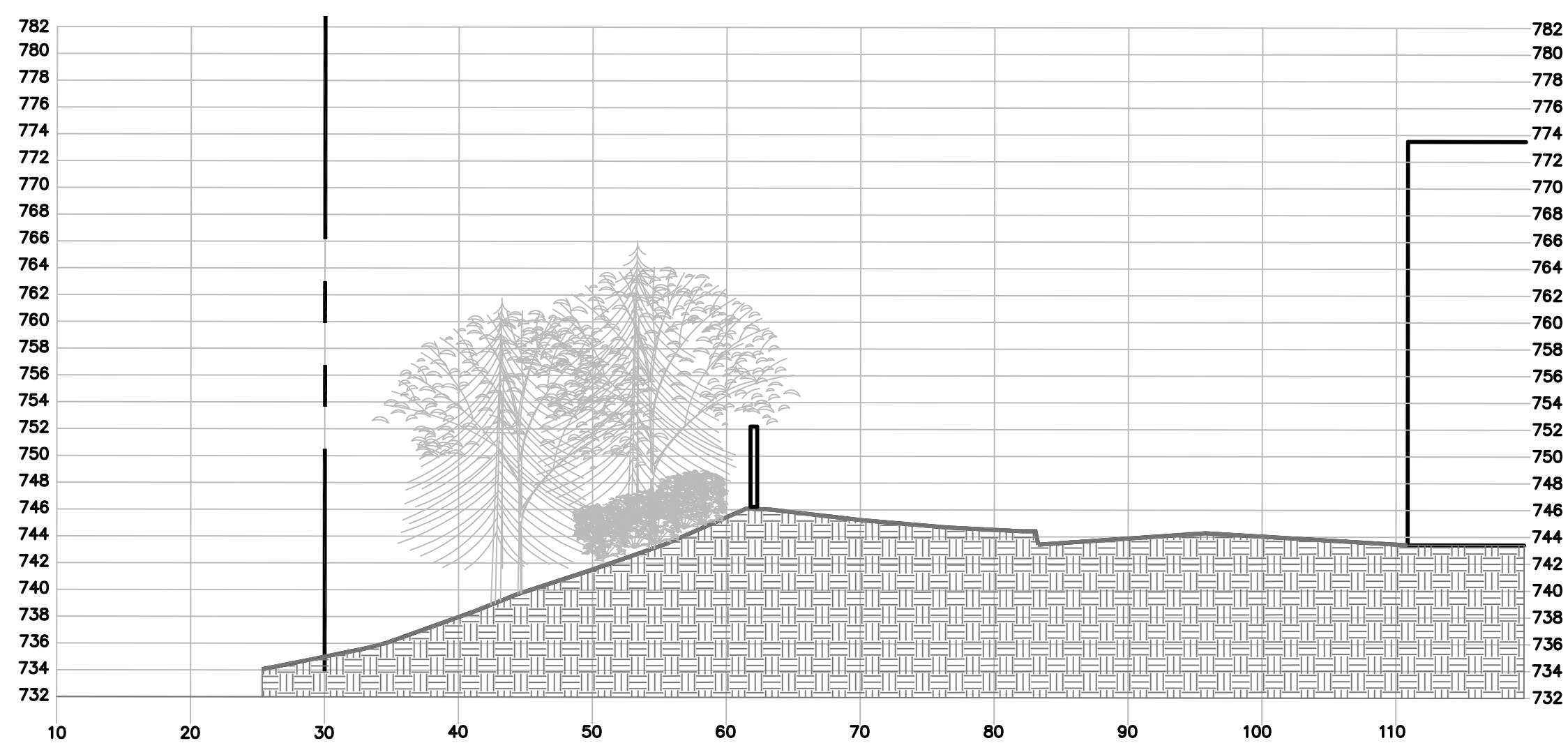
- Prior to the release of the Performance Bond, the City of Rochester Hills Landscape Architect must inspect all landscape plantings including but not limited to existing trees, replacement trees, buffer plantings, and parking lot islands. The right-of-way will be inspected by the Forestry Division to identify any plantings or existing that pose a hazard to the safe use of the right-of-way. Forestry may require the developer to remove and possibly replace any such trees.
- All trees and shrubs must be planted at least 10' from the edge of a public roadway. Shade trees and shrubs must be planted at least 5' from the edge of a public walkway. Evergreen and ornamental trees must be planted at least 10' from the edge of a public walkway. All trees and shrubs must be planted at least 10' from any fire hydrant. Shade and evergreen trees must be planted at least 15' from the nearest overhead wire and at least 10' from the nearest underground utility.
- No tree or shrub may be planted within the triangular area formed at the intersection of any street right-of-way at a distance of 25' from their point of intersection. No tree or shrub may be planted in the triangular area formed at the intersection of any driveway with a public sidewalk at a distance along each line of 15' from their point of intersection.
- Prior approval is required to plant any tree or shrub in the public right-of-way.
- No substitutions or changes of location or plant types shall be made without the approval of the developer and the City of Rochester Hills Landscape Architect.
- The developer and/or the City of Rochester Hills Landscape Architect shall have the right, at any stage of the installation, to reject any work or material that does not meet the requirements of the plans or specifications.
- Replacement trees may not be planted within the drip line of existing trees.
- No substitutions or changes of location or plant type shall be made without the approval of the developer and the City of Rochester Hills Landscape Architect.
- Trees must be at least 10' from underground utilities and 15' from overhead utilities.

TREE PROTECTION NOTES

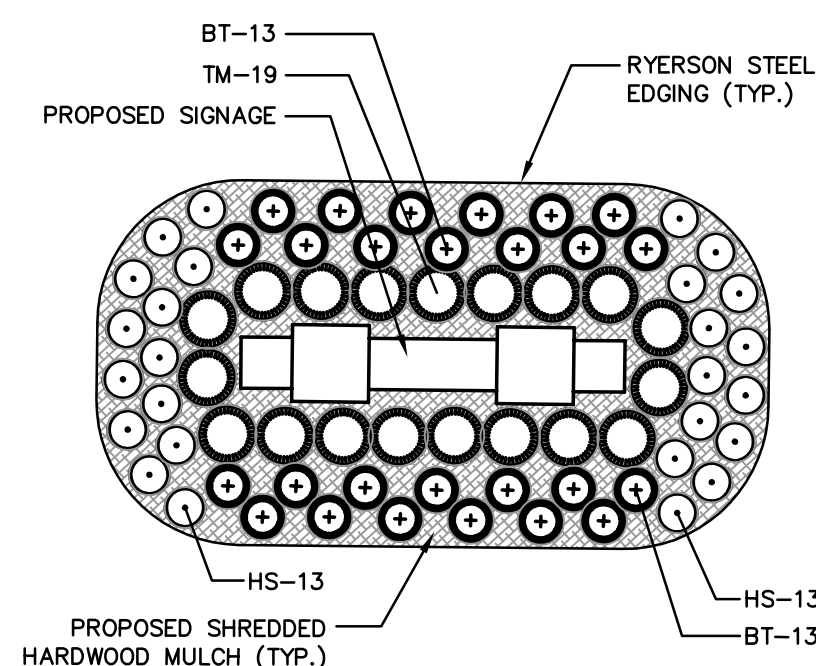
- The tree protection fencing (TPF) shall be erected per the plans approved by the City of Rochester Hills Planning Department. The TPF must be in place and be inspected by the City of Rochester Hills' Landscape Architect prior to the start of any earthwork or construction operations. It is the developer's responsibility to contact the City Planning Department at 1-248-656-4660 to schedule a TPF inspection. The TPF shall remain in place throughout the entire construction process or until the City authorizes the removal or issues a final Certificate of Occupancy, whichever occurs first.
- Upon completion of grading and the installation of the infrastructure a second inspection of the TPF and the trees designated for preservation is required by the City of Rochester Hills' Landscape Architect prior to the start of any additional construction. It is the developer's responsibility to contact the City Planning Department at 1-248-656-4660 to schedule this TPF inspection.
- Upon completion of all construction and prior to the removal of the TPF the City of Rochester Hills' Landscape Architect must inspect all trees designated to be preserved. The landscape Performance Bond will not be released until this inspection is complete and all related issues are resolved. It is the developer's responsibility to contact the City Planning Department at 1-248-656-4660 to schedule this inspection.
- A final inspection by the City of Rochester Hills' Landscape Architect is required at the end of the warranty and maintenance period. The landscape Maintenance Bond will not be released until this inspection is complete and all related issues are resolved. It is the developer's responsibility to contact the City Planning Department at 1-248-656-4660 to schedule this inspection.
- The Tree Conservation Ordinance prohibits any construction or development activities within the drip line of and regulated trees not approved for removal, including but not limited to land clearing, grubbing, trenching, grading or filling, no person shall place any solvents, building material, construction equipment, soil deposits, or harmful materials within the drip line limit of trees designated for preservation.
- Proposed grades are to match the existing elevations outside the limits of the TPF. No grading either cut or fill is permitted within the drip line of any tree designated for preservation.
- During the construction process no person shall attach any device or wire/cable/cord/rope to an existing tree designated to be preserved.
- All utility service requests must include notification to the installer that protected trees must be avoided. All trenching shall occur outside the TPF.
- Swales shall be routed to avoid the area within the drip line of the any tree designated for preservation. Swales shall be constructed so as not to direct any additional flow into the drip line a tree designated for preservation.
- If tree protection cannot be maintained for a tree throughout entire period required. The replacement of that tree will be required on and inch for inch basis prior to the issuance of the Certificate of Occupancy.
- Regulated trees located off-site on adjacent properties that may be affected by construction operations must be protected as defined here in.
- The TPF shall consist of 4 foot high orange snow fencing to be installed around the drip line of all tree designated to be saved. This fencing shall be supported by 6 foot metal T-bar posts 5 feet on center and driven a minimum of 24" into ground. The TPF fencing shall remain upright and securely in place for the required time as specified above.



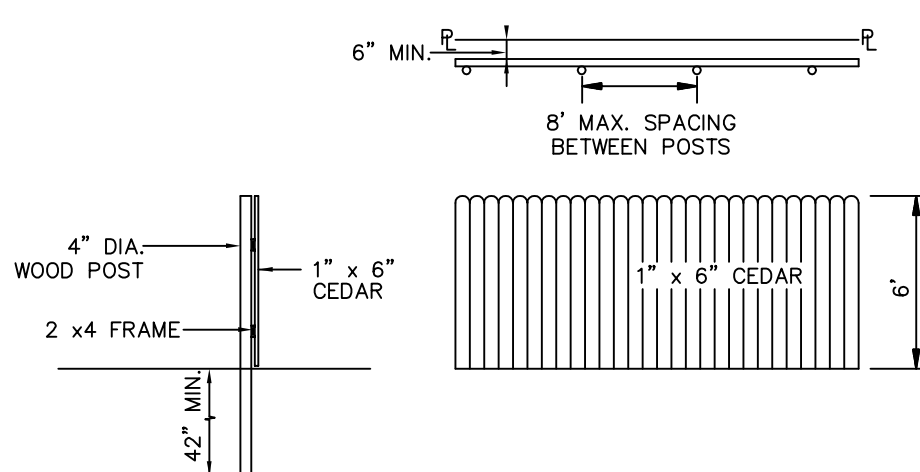
TREE PROTECTION DETAIL  
CITY OF ROCHESTER HILLS NOT TO SCALE



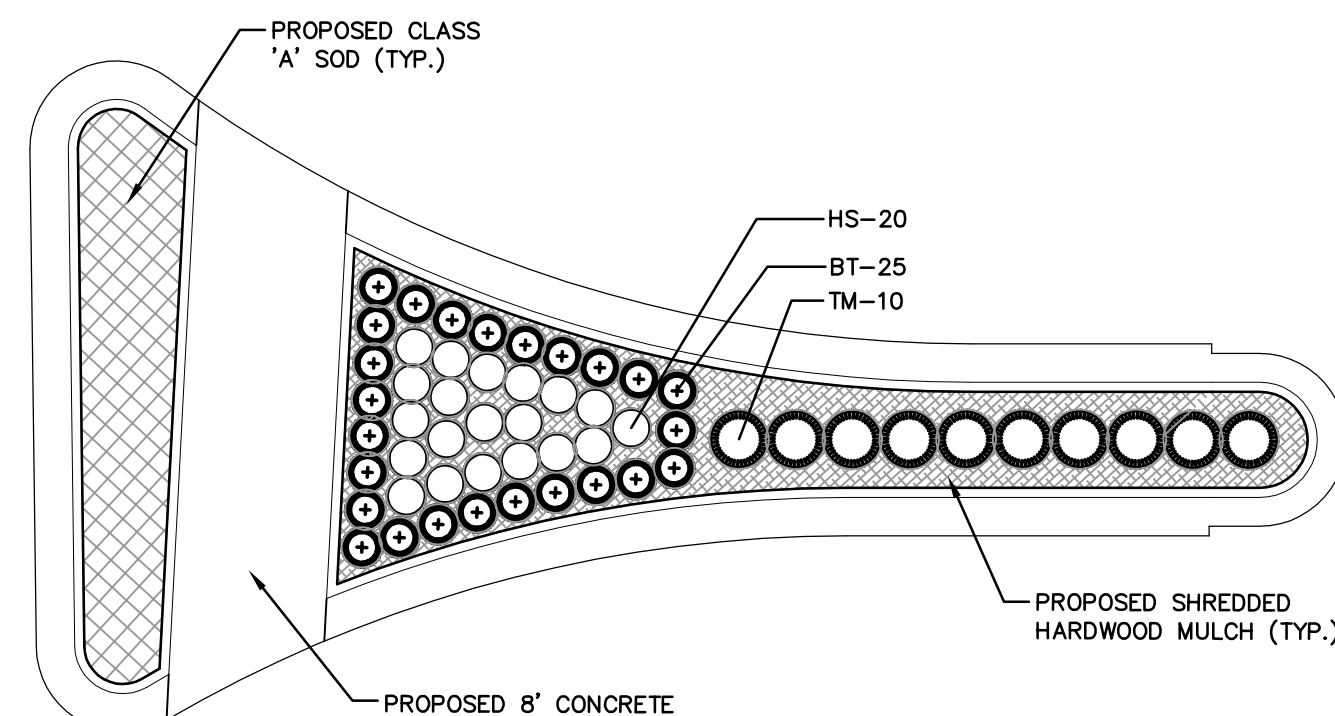
CROSS SECTION AA  
1" = 10'



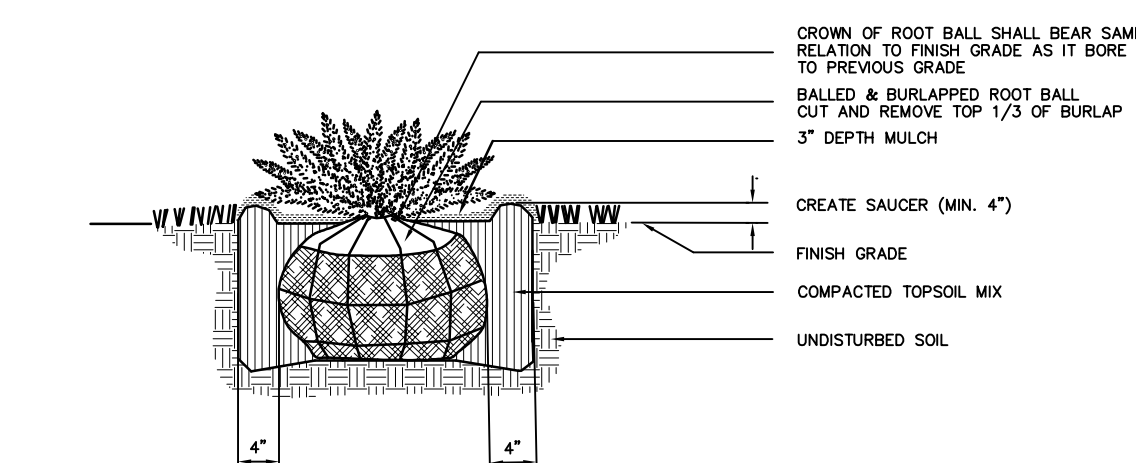
SIGNAGE DETAIL  
1" = 10'



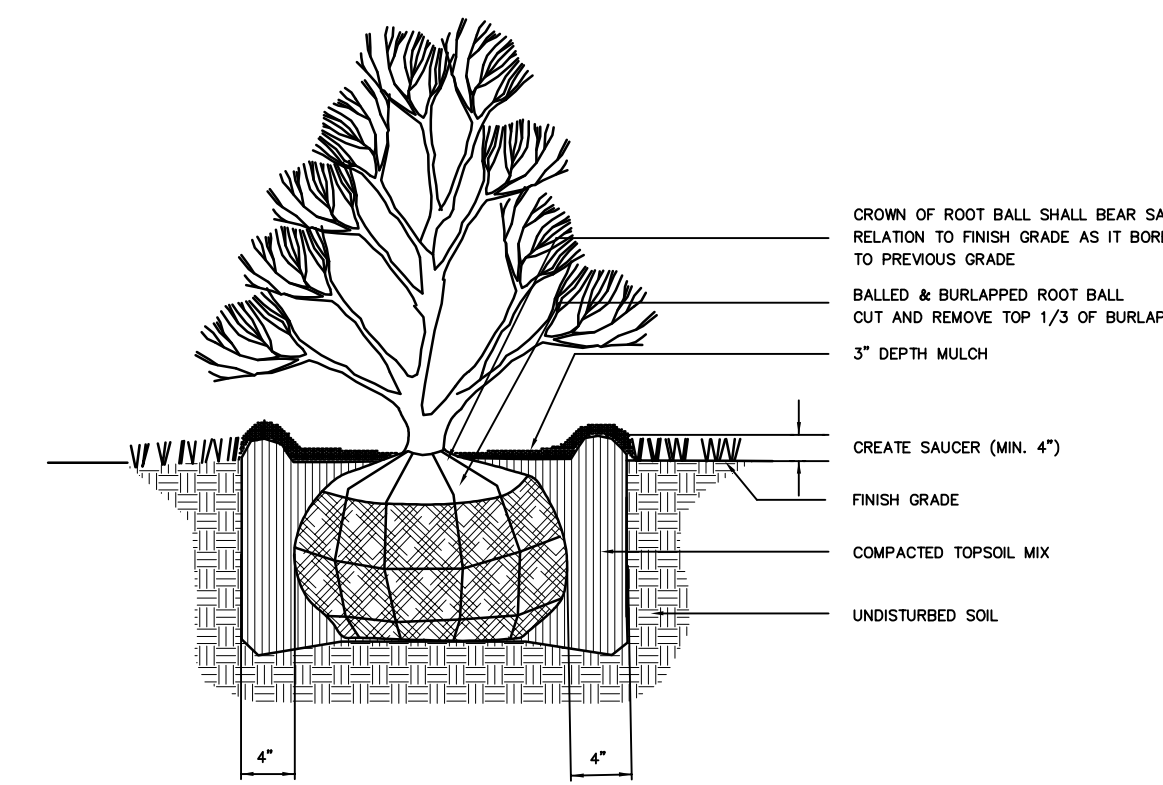
STOCKADE FENCE DETAIL  
NOT TO SCALE



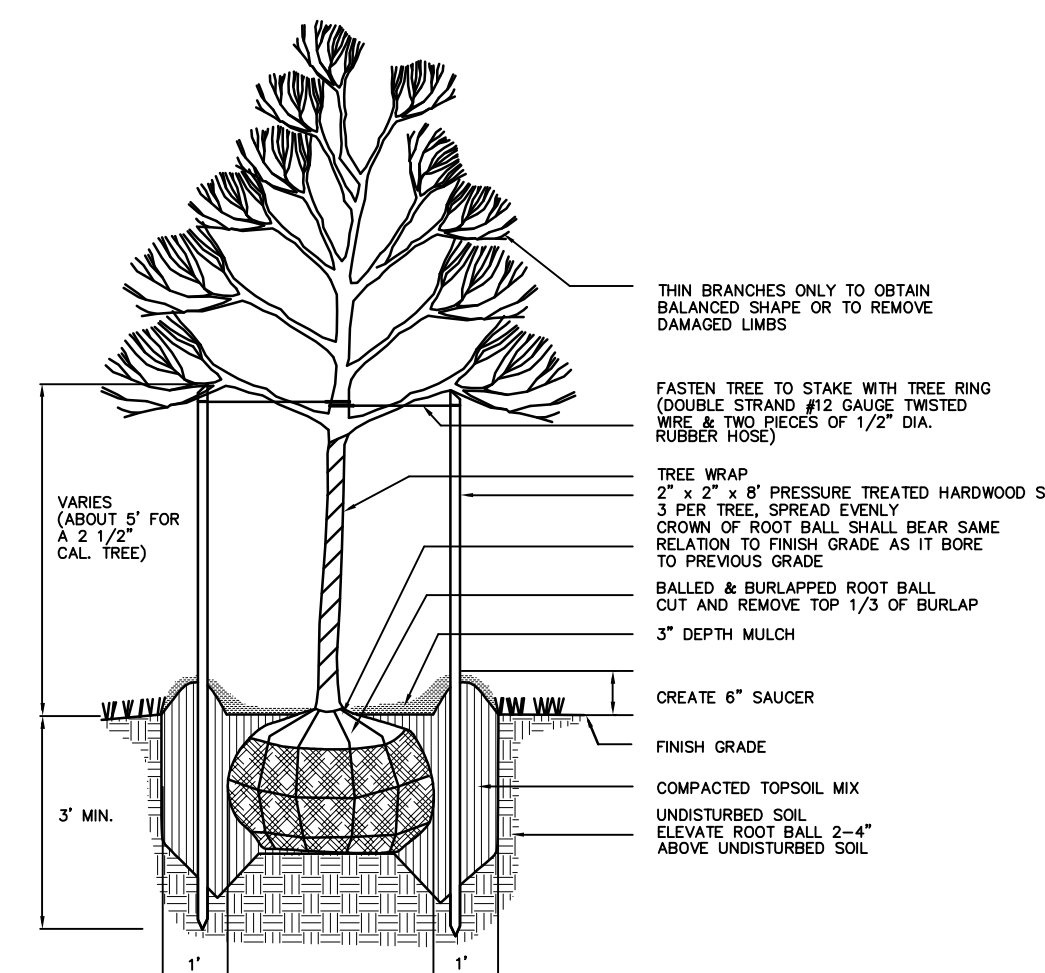
MEDIAN PLANTING DETAIL  
1" = 10'



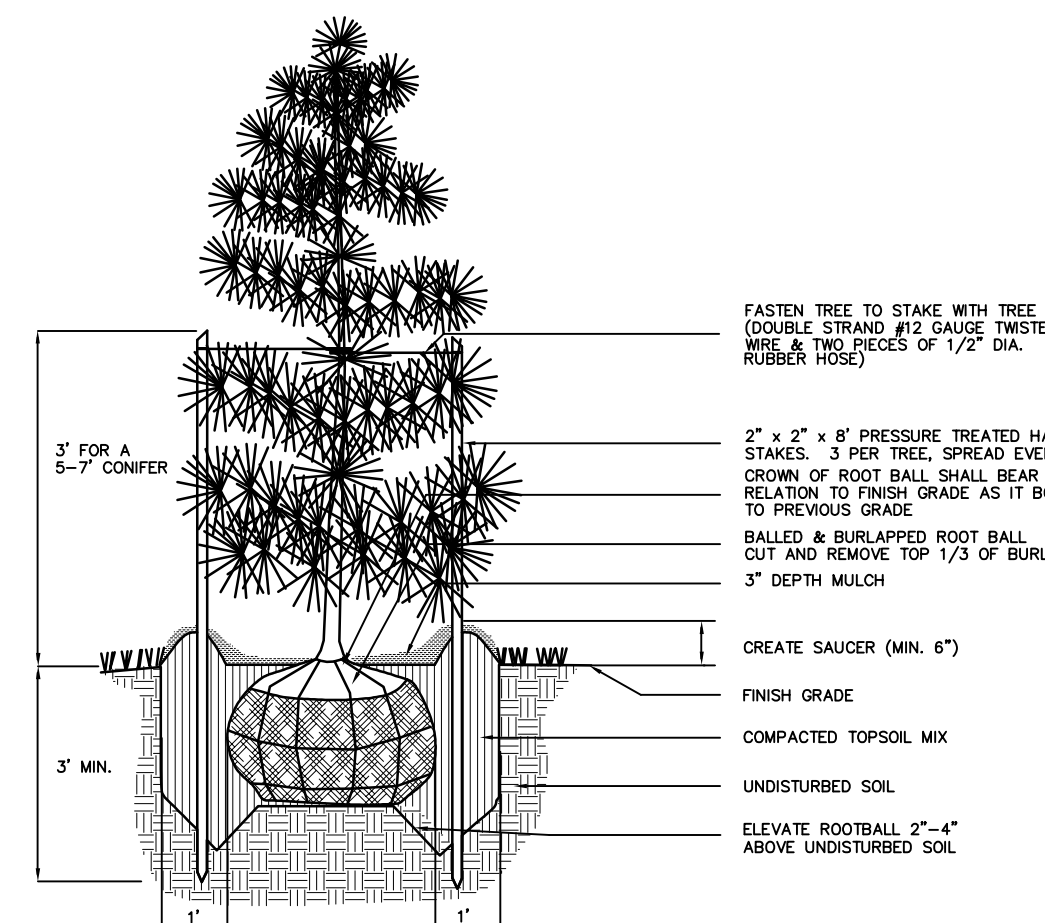
CONIFEROUS SHRUB PLANTING DETAIL  
BALLED & BURLAPPED  
NOT TO SCALE



DECIDUOUS SHRUB PLANTING DETAIL  
BALLED AND BURLAPPED  
NOT TO SCALE



DECIDUOUS TREE PLANTING DETAIL  
BALLED AND BURLAPPED  
NOT TO SCALE



CONIFEROUS TREE PLANTING DETAIL  
BALLED & BURLAPPED  
NOT TO SCALE

CITY FILE: 05-037  
NOT TO BE USED FOR CONSTRUCTION

REVISIONS

DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/26/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
Engineering • Surveying • Planning  
Environmental • Water/Wastewater  
8 6 6 8 5 0 4 2 0 0  
www.atwell-hicks.com  
MICHIGAN ILLINOIS OHIO FLORIDA

**LOWE'S HOME CENTERS, INC.**  
1605 CURTIS BRIDGE ROAD  
REC DOCK  
WILKESBORO, NC 28697  
336.658.4000 (V) 336.658.3257 (F)

**LOWE'S**

SITE PLAN  
LANDSCAPE DETAIL SHEET  
LOWE'S OF  
ROCHESTER HILLS  
OAKLAND COUNTY, MICHIGAN  
PROJECT No. 05000184 DRAWN BY: JRT CHECKED BY: DL

ORIGINAL  
ISSUE DATE: 10/18/2005  
PERMIT SET  
ISSUE DATE:  
CONSTRUCTION SET  
ISSUE DATE:  
DRAWING NUMBER:  
SP-32  
4102-50-32

K:\05000184\wp\Plan\_Site\SitePlan\Main\05000184SP-32-LS.dwg, 08/20/06 2:37:28 PM, entbdr

**3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171**  
FOR THE LOCATION OF UNDERGROUND FACILITIES

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

**NOTICE:**  
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

COPYRIGHT © 2006 ATWELL-HICKS  
NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS



'WLx'  
 WL HUBBELL NO.: MSVLOWESx  
 candela file 'HP08644.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center)= 18 in  
 number locations= 22, number luminaires= 22  
 kw all locations= 10.1  
 Occurrences: 22 at mounting height 20 ft

'H123FG'  
 H123FG HUBBELL NO.: MSVA0400HFPx3-GS  
 candela file 'HP08643.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center)= 21 in  
 mounting height= 25 ft  
 number locations= 14, number luminaires= 14  
 kw all locations= 6.4

'H23FG'  
 H23FG HUBBELL NO.: MSVA40H-FPx-x  
 candela file 'HP08644.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center)= 21 in  
 mounting height= 25 ft  
 number locations= 2, number luminaires= 2  
 kw all locations= 0.9

'G23FG'  
 G23FG HUBBELL NO.: MSVA40H-FWx-xAR  
 2 luminaires per location, candela file 'HP08645.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center)= 21 in  
 mounting height= 25 ft  
 number locations= 11, number luminaires= 22  
 kw all locations= 10.1

'B23FG'  
 B23FG HUBBELL NO.: MSV400HBW53AR5FG  
 3 luminaires per location, candela file 'HP08645.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center)= 21 in  
 mounting height= 25 ft  
 number locations= 12, number luminaires= 36  
 kw all locations= 16.6

Fixture to remain on for night time security during non business hours

Target Point Set  
 885 points at z=0, sp 20ft by 20ft  
 HORIZONTAL FOOTCANDLES  
 Average 4.2  
 Maximum 11.2  
 Minimum 0.2  
 Avg:Min 20.94  
 Max:Min 56.00  
 Coef Var 0.48  
 UnifGrad 10.00

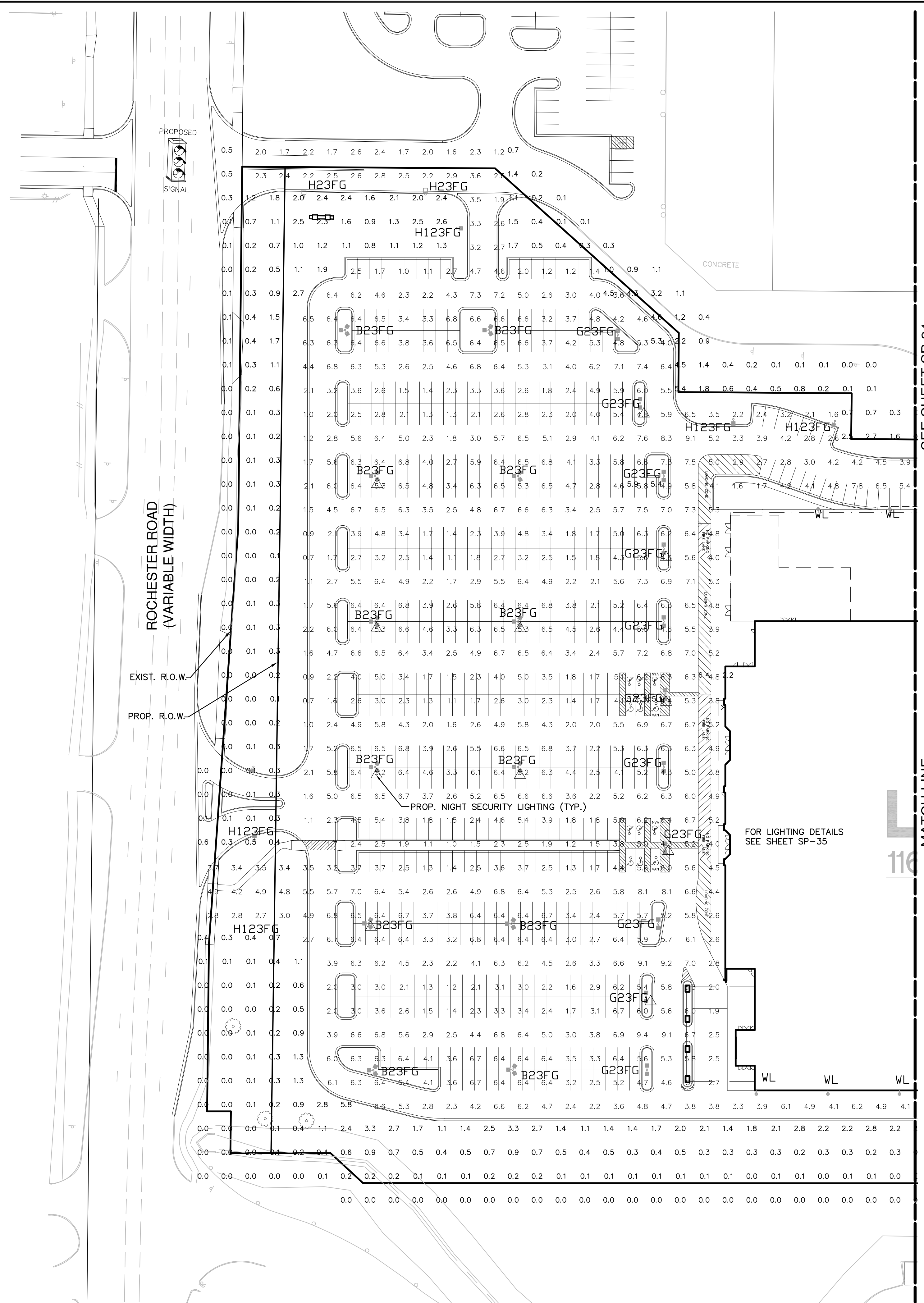
NOTE:  
 ALL FIXTURES WILL BE FULLY SHIELDED AND DOWNWARD  
 DIRECTED WITH CONCEALED SOURCE LIGHTING AND FLAT LENS



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:  
 CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

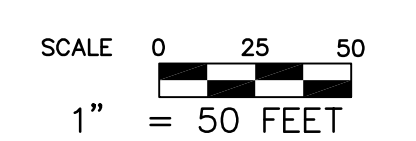
COPYRIGHT © 2006 ATWELL-HICKS  
 NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS



SEE SHEET SP-34

MATCH LINE

FOR LIGHTING DETAILS SEE SHEET SP-35

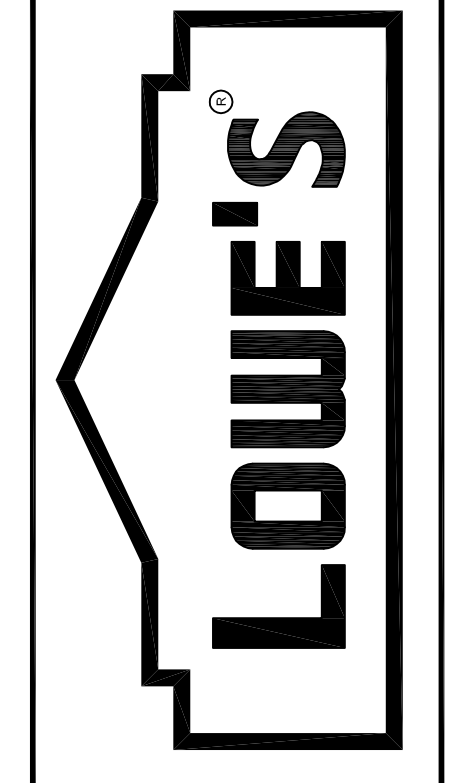


CITY FILE: 05-037  
 NOT TO BE USED FOR CONSTRUCTION

REVISIONS	
DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
 Engineering • Surveying • Planning  
 Environmental • Water/Wastewater  
 8 6 6 8 5 0 4 2 0 0  
 www.atwell-hicks.com  
 MICHIGAN ILLINOIS OHIO FLORIDA

LOWE'S HOME CENTERS, INC.  
 1605 CURTIS BRIDGE ROAD  
 REEC DOCK  
 WILKESBORO, NC 28697  
 336.658.4000 (V) 336.658.3257 (F)



SITE PLAN  
 PHOTOMETRIC PLAN  
 LOWE'S OF  
 ROCHESTER HILLS  
 OAKLAND COUNTY, MICHIGAN  
 PROJECT No: 05000184 | DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL  
 ISSUE DATE: 10/18/2005  
 PERMIT SET  
 ISSUE DATE:  
 CONSTRUCTION SET  
 ISSUE DATE:  
 DRAWING NUMBER:  
 SP-33  
 4102-50-33

K:\05000184\Plan\_Site\SitePlan\Primary\As\_Bid\05000184SP-33.dwg, 08/22/06 2:38:04 PM, enthr



'WLx'  
 WL HUBBELL NO.: MSVLOWEX  
 candela file 'HP08644.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center) = 18 in  
 number locations = 22, number luminaires = 22  
 kw all locations = 10.1  
 Occurrences: 22 at mounting height 20 ft

'H123FG'  
 H123FG HUBBELL NO.: MSVA0400HFPx3-GS  
 candela file 'HP08643.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center) = 21 in  
 mounting height = 25 ft  
 number locations = 14, number luminaires = 14  
 kw all locations = 6.4

'H23FG'  
 H23FG HUBBELL NO.: MSVA40H-FPx-x  
 candela file 'HP08644.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center) = 21 in  
 mounting height = 25 ft  
 number locations = 2, number luminaires = 2  
 kw all locations = 0.9

'G23FG'  
 G23FG HUBBELL NO.: MSVA40H-FWx-xAR  
 2 luminaires per location, candela file 'HP08645.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center) = 21 in  
 mounting height = 25 ft  
 number locations = 11, number luminaires = 22  
 kw all locations = 10.1

'B23FG'  
 B23FG HUBBELL NO.: MSV400HBW53AR5FG  
 3 luminaires per location, candela file 'HP08645.IES'  
 1 lamp(s) per luminaire, 36000 initial lumens per lamp  
 Light Loss Factor = 0.750, watts per luminaire = 460  
 Outreach (from mounting axis to photometric center) = 21 in  
 mounting height = 25 ft  
 number locations = 12, number luminaires = 36  
 kw all locations = 16.6

Fixture to remain on for night time security during non business hours

Target Point Set  
 885 points at z=0, sp 20ft by 20ft  
 HORIZONTAL FOOTCANDLES  
 Average 4.2  
 Maximum 11.2  
 Minimum 0.2  
 Avg: Min 20.94  
 Max: Min 56.00  
 Coef Var 0.48  
 UnifGrad 10.00

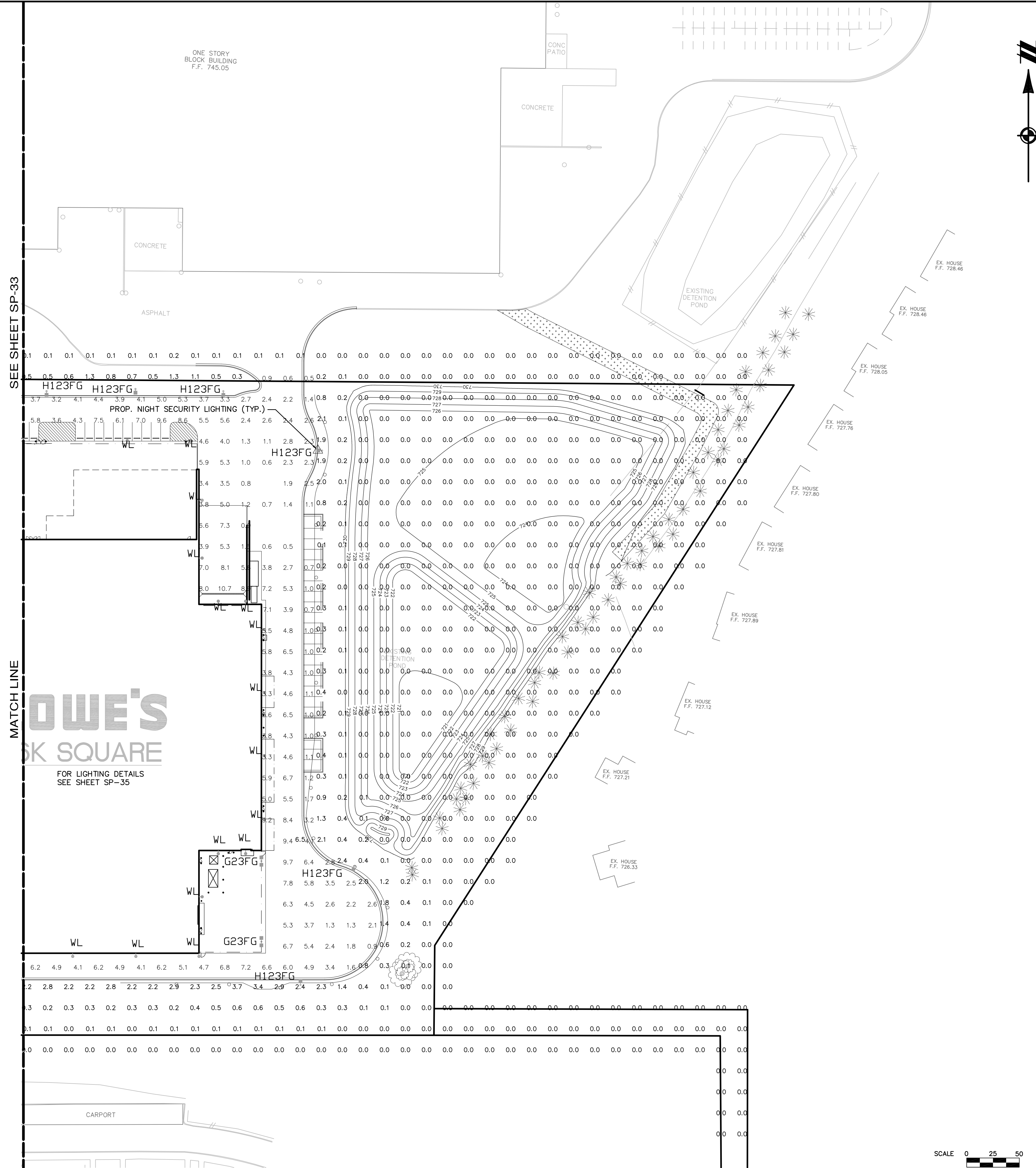
NOTE:  
 ALL FIXTURES WILL BE FULLY SHIELDED AND DOWNWARD  
 DIRECTED WITH CONCEALED SOURCE LIGHTING AND FLAT LENS



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:  
 CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

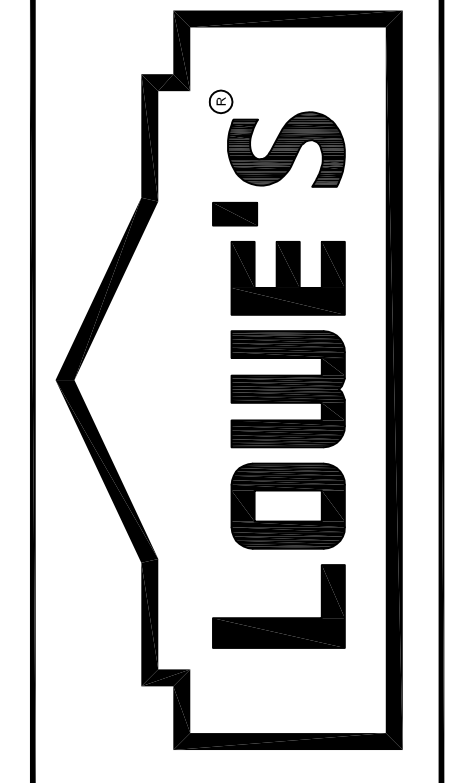
COPYRIGHT © 2006 ATWELL-HICKS  
 NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF ATWELL-HICKS



REVISIONS	
DATE	DESCRIPTION
12/21/05	REVISION PER CITY OF ROCHESTER HILLS
07/06/06	REVISION PER CITY OF ROCHESTER HILLS
08/28/06	REVISION PER CITY OF ROCHESTER HILLS

**ATWELL-HICKS**  
 Engineering • Surveying • Planning  
 Environmental • Water/Wastewater  
 8 6 6 8 5 0 4 2 0 0  
 www.atwell-hicks.com  
 MICHIGAN ILLINOIS OHIO FLORIDA

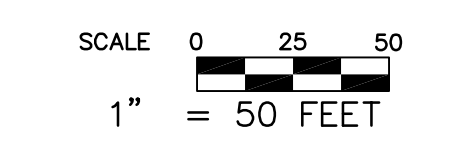
LOWE'S HOME CENTERS, INC.  
 1605 CURTIS BRIDGE ROAD  
 REC DOCK  
 WILKESBORO, NC 28697  
 336.658.4000 (V) 336.658.3257 (F)



SITE PLAN  
 PHOTOMETRIC PLAN  
 LOWE'S OF  
 ROCHESTER HILLS  
 OAKLAND COUNTY, MICHIGAN  
 PROJECT No: 05000184 | DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL ISSUE DATE: 10/18/2005  
 PERMIT SET ISSUE DATE:  
 CONSTRUCTION SET ISSUE DATE:  
 DRAWING NUMBER:  
 SP-34  
 4102-50-34

CITY FILE: 05-037  
 NOT TO BE USED FOR CONSTRUCTION



K:\05000184\wp\Plan\_Site\SitePlan\Primary\As\_Bid\05000184SP-34.dwg, 08/22/06 2:38:19 PM, enthr