

STORM SEWER NOTES

- ALL CONCRETE PIPE SHALL BE REINFORCED, AND CONFORM TO A.S.T.M. DESIGNATION C76 CLASS III UNLESS OTHERWISE NOTED.
- ALL STORM SEWER STRUCTURES WITHIN PROJECT SITE TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF OTTAWA STORMWATER MANAGEMENT CONSTRUCTION SPECIFICATIONS.
- ALL TRENCHES UNDER AREAS TO BE PAVED AND UNDER EXISTING PAVING SHALL BE GRANULARLY FILLED WITH 3/4" MINUS CRUSHED LIMESTONE ONLY. BACK FILL SHALL BE PLACED IN ACCORDANCE WITH CITY OF OTTAWA STANDARD CONSTRUCTION SPECIFICATIONS.
- ALL TRENCH BACK FILLS UNDER PAVEMENT WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE GRANULAR BACKFILLED. TRENCH BACK FILLS UNDER PAVED AREAS, OUTSIDE OF PUBLIC RIGHT-OF-WAY SHALL BE GRANULAR BACK FILL ALSO IN LIEU OF THE COMPACTED EARTH BACKFILL.
- "O" RING RUBBER GASKETED WATER TIGHT JOINTS SHALL BE USED FOR ALL STORM SEWER REACHES ON THE STORM SEWER PROFILE SHEETS.
- A 5/8" TRASH BAR WILL BE INSTALLED AND CENTERED ACROSS ALL AREA INLET AND CURB INLET OPENINGS.
- RIP-RAP SHOWN AT FLARED ENDS WILL BE EVALUATED IN THE FIELD AFTER INSTALLATION FOR EFFECTIVENESS AND FIELD MODIFIED, IF NECESSARY, TO REDUCE EROSION ON AND OFF-SITE.
- BRICK SHALL NOT BE USED IN THE CONSTRUCTION OF STORM SEWER STRUCTURES.
- ALL CONCRETE PIPES WILL BE INSTALLED WITH O-RING RUBBER TYPE GASKETS.
- CONNECTIONS AT ALL STORM SEWER STRUCTURES TO BE MADE WITH A-LOK JOINT OR EQUAL.
- ALL STORM SEWER INLETS SHALL BE INSTALLED WITH A MARKER, BELOW IS THE RECOMMENDATIONS:

THE CITY WILL ALLOW THE FOLLOWING MARKERS AND ADHESIVE PROCEDURES ONLY AS SHOWN IN THE TABLE BELOW OR AN APPROVED EQUAL. "PEEL AND STICK" ADHESIVES PADS WILL NOT BE ALLOWED.

MANUFACTURER	SIZE	ADHESIVE	STYLE	MESSAGE (PART #)	WEBSITE
TOP INTERNATIONAL	3 7/8"	EPOXY	CRYSTAL CAP	NO DRAINING DRAINS TO WATERSHED (SD-W-CC)	WWW.TOPINTERNATIONAL.COM
DAS MANUFACTURING, INC.	4"	EPOXY	STANDARD STYLE	NO DRAINING DRAINS TO STREAM (SD-W-CC)	WWW.DASMANUFACTURING.COM

SANITARY SEWER NOTES

- UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE LOCATION SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE LOCATED PRIOR TO ANY GRADING OF CONSTRUCTION OF IMPROVEMENTS.
- GAS, WATER AND OTHER UNDERGROUND UTILITIES SHALL NOT CONFLICT WITH THE DEPTH OR HORIZONTAL LOCATION OF EXISTING OR PROPOSED SANITARY AND STORM SEWERS, INCLUDING HOUSE LATERALS.
- ALL EXISTING SITE IMPROVEMENTS DISTURBED, DAMAGED, OR DESTROYED SHALL BE REPAIRED OR REPLACED TO CLOSELY MATCH PRE-CONSTRUCTION CONDITIONS.
- ALL FILL INCLUDING PLACES UNDER PROPOSED STORM AND SANITARY SEWER LINES AND PAVED AREAS INCLUDING TRENCH BACK FILLS WITHIN AND OFF THE ROAD RIGHT-OF-WAY SHALL BE COMPACTED TO 90 PERCENT OF MAXIMUM DENSITY AS DETERMINED BY THE "MODIFIED ASTHMA T-180 COMPACTION TEST (ASTM D1557)". ALL TESTS SHALL BE VERIFIED BY A SOILS ENGINEER CONCURRENT WITH GRADING AND BACK FILLING OPERATIONS. THE COMPACTED FILL SHALL BE FREE OF RUTTING AND SHALL BE NON-YIELDING AND NON-PUMPING DURING PROOF ROLLING AND COMPACTION.
- THE CONTRACTOR SHALL PREVENT ALL STORM, SURFACE WATER, MUD AND CONSTRUCTION DEBRIS FROM ENTERING THE EXISTING SANITARY SEWER SYSTEM.
- ALL SANITARY SEWER FLOW LINES AND TOPS BUILT WITHOUT ELEVATIONS FURNISHED BY THE ENGINEER WILL BE THE RESPONSIBILITY OF THE SEWER CONTRACTOR.
- EASEMENTS SHALL BE PROVIDED FOR ALL PUBLIC SANITARY SEWERS.
- ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE CURRENT CONSTRUCTION STANDARDS OF THE DUCKETT CREEK SANITARY DISTRICT.
- THE DUCKETT CREEK SANITARY DISTRICT SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION FOR COORDINATION OF INSPECTION.
- ALL SANITARY SEWER BUILDING CONNECTIONS SHALL BE DESIGNED SO THAT THE MINIMUM VERTICAL DISTANCE FROM THE LOW POINT OF THE BASEMENT TO THE FLOW LINE OF A SANITARY SEWER AT THE CORRESPONDING BUILDING CONNECTION SHALL NOT BE LESS THAN THE DIAMETER OF THE PIPE PLUS THE VERTICAL DISTANCE OF 2-1/2 FEET.
- ALL SANITARY SEWER MANHOLES SHALL BE WATERPROOFED ON THE EXTERIOR IN ACCORDANCE WITH THE MISSOURI DEPT. OF NATURAL RESOURCES SPECIFICATION 10 CSR-8.12(7)(E).
- ALL PVC SANITARY SEWER PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-3034 STANDARD SPECIFICATION FOR PVC POLYVINYL CHLORIDE SEWER PIPE, SDR-35 OR EQUAL, WITH "CLEAN" 1/2 INCH TO 1 INCH GRANULAR STONE BEDDING UNIFORMLY GRADED, THIS BEDDING SHALL EXTEND FROM 4 INCHES BELOW THE PIPE TO SPRING LINE OF PIPE. IMMEDIATE BACK FILL OVER PIPE SHALL CONSIST OF SAME SIZE "CLEAN" OR "MINUS" STONE FROM SPRING LINE OF PIPE TO 6 INCHES ABOVE THE TOP OF PIPE.
- ALL SANITARY AND STORM SEWER TRENCH BACK FILLS SHALL BE WATER JETTED. GRANULAR BACK FILL WILL BE USED UNDER PAVEMENT AREAS.
- ALL PIPES SHALL HAVE POSITIVE DRAINAGE THROUGH MANHOLES. FLAT INVERT STRUCTURES NOT ALLOWED.
- ALL CREEK CROSSINGS SHALL BE LINED WITH RIP-RAP AS DIRECTED BY DISTRICT INSPECTORS.
- BRICK SHALL NOT BE USED ON SANITARY SEWER MANHOLES.
- EXISTING SANITARY SEWER SERVICE SHALL NOT BE INTERRUPTED.
- MAINTAIN ACCESS TO EXISTING RESIDENTIAL DRIVEWAYS AND STREETS.
- PRE-MANUFACTURED ADAPTERS SHALL BE USED AT ALL PVC TO DIP CONNECTIONS. RUBBER BOOT/MISSION-TYPE COUPLINGS WILL NOT BE ALLOWED.
- ANY PERMITS, LICENSES, EASEMENTS, OR APPROVALS REQUIRED TO WORK ON PUBLIC OR PRIVATE PROPERTIES OR ROADWAYS ARE THE RESPONSIBILITY OF THE DEVELOPER.
- "TYPE N" LOCK-TYPE COVER AND LOCKING DEVICE (LOCK-LUG) SHALL BE USED WHERE LOCK-TYPE COVERS ARE REQUIRED.
- ALL MANHOLES ARE 42" IN DIAMETER UNLESS NOTED OTHERWISE.
- ALL LATERALS TO BE 4" PVC (MIN.).
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST ALL SANITARY SEWER MANHOLES (THAT ARE AFFECTED BY THE DEVELOPMENT) TO FINISH GRADE.
- EPOXY COATING SHALL BE USED ON ALL SANITARY SEWER MANHOLES THAT RECEIVE PRESSURIZED MAINS.

WATER LINE NOTES

- ALL MATERIALS AND METHODS OF CONSTRUCTION FOR WATER MAINS TO MEET THE REQUIREMENTS OF THE PUBLIC WATER SUPPLY DISTRICT NO.2 SPECIFICATIONS AND STANDARDS APPROVED BY MONR LNER REVIEW NO. 66196-04R
- WATER MAINS SHALL BE POLY VINYL CHLORIDE (PVC) CLASS 200, SDR 21 PIPE CONFORMING TO A.S.T.M. SPECIFICATION D2241. THE PIPE SHALL BE PRESSURE RATED FOR A HYDROSTATIC WORKING PRESSURE OF 200 PSI AT 73.4 DEGREES F AND SHALL MEET ALL APPLICABLE REQUIREMENTS AS SET FORTH UNDER COMMERCIAL STANDARD (CS) 256-63.
- DUCTILE IRON PIPE MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL THE REQUIREMENTS OF U.S.A. STANDARD A2151 (A.W.W.A. C-151-65). THE PIPE SHALL BE FURNISHED WITH MECHANICAL, PUSH ON, OR FLANGE JOINTS AS REQUIRED. THE INTERIOR SURFACE OF PIPE SHALL BE COATED WITH A CEMENT-MORTAR LINING IN ACCORDANCE WITH U.S.A. STANDARD A 21.4 (A.W.W.A. C 104). AFTER DRYING, THE CEMENT LINING SHALL BE SEAL COATED WITH SIMILAR A.W.W.A. APPROVED BITUMINOUS VARNISH. ALL FITTINGS AND BENDS SHALL BE CONSTRUCTED OF CAST OR DUCTILE IRON.
- WATER MAIN TRACER TAPE TO BE INSTALLED WITH ALL WATER MAIN AND SHALL CONSIST OF THREE INCH WIDE TAPE MADE OF BONDED LAYER PLASTIC WITH A METALLIC FOIL CORE. TAPE SHALL BE "TERRA TAPE D" AS MANUFACTURED BY THE GRIFFOLYN COMPANY OF HOUSTON, TEXAS, OR APPROVED EQUAL.
- WATER MAIN LOCATOR WIRE SHALL BE INSTALLED WITH ALL WATER MAIN, FITTINGS, AND VALVE INSTALLATION AND SHALL CONSIST OF A STANDARD ELECTRIC SERVICE WIRE, A SINGLE NO. 12 U.L. APPROVED COPPER WIRE OF THE SOLID OR STRAND TYPE WITH INSULATION FOR 600 VOLTS.
- ALL VALVES FOR EXTERIOR USE SHALL BE BURIED GATE VALVES WITH A VALVE BOX AND TWO INCH SQUARE NUT ATTACHMENT FOR MANUAL OPERATION WITH STANDARD VALVE WRENCH. GATE VALVES SHALL BE IRON BODIED WITH BRASS OR BRONZE MOUNTED DOUBLE DISC GATE. GATE VALVES SHALL BE OF THE NON-RISING STEM TYPE, OPENED BY TURNING COUNTER-CLOCKWISE. THE VALVE STEM SHALL HAVE DOUBLE "O" RING SEALS AND TERMINATE AT TOP WITH TWO INCH SQUARE NUT. GATE VALVE CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE LATEST GOVERNING SPECIFICATIONS OF THE A.S.T.M. AND A.W.W.A. ALL GATE VALVES FOR USE SHALL BE "MUELLER" OR APPROVED EQUAL.
- VALVE BOXES FOR USE SHALL BE THE SCREW-TYPE, EXTENSION SLEEVE KIND. ALL BOXES SHALL BE FITTED WITH A RECESSED COVER HAVING THE WORD "WATER" CAST IN THE TOP.
- FIRE HYDRANTS SHALL BE MUELLER "CENTURION" OR THE AMERICAN DARLING MODEL NO. "B-84"-07. HYDRANTS SHALL BE TRAFFIC MODEL TYPE WITH A WORKING PRESSURE OF 150 PSI IN FULL COMPLIANCE WITH A.W.W.A. STANDARD SPECIFICATIONS C-502 OF THE LATEST REVISION. HYDRANTS TO BE THREE-WAY WITH TWO 2 INCH CONNECTIONS AND ONE 4 INCH CONNECTION AND SHALL HAVE A 5 1/4" VALVE, A 6 INCH BARREL, AND SHALL BE OF A BREAKAWAY DESIGN, FROST FREE WITH CHAIN, LEFT HAND OPEN, AND HAVE NATIONAL STANDARD THREADS.
- ALL FIRE HYDRANTS SHALL BE SET SO THE CENTER OF A HOSE NOZZLE SHALL NOT BE LESS THAN 18" ABOVE FINISHED GRADE. FIRE HYDRANT OUTLETS MUST FACE THE STREET OR ACCESS DRIVE.
- THERE SHALL BE NO OBSTRUCTIONS WITHIN 6 FEET OF ANY FIRE HYDRANT AND/OR FIRE DEPARTMENT CONNECTION TO AN AUTOMATIC SPRINKLER SYSTEM.
- FIRE HYDRANT SHALL BE IN ACCORDANCE WITH LOCAL FIRE PROTECTION DISTRICT.
- CONCRETE FOR THRUST BLOCKING AT BENDS, TEES, VALVES, HYDRANTS, ETC., SHALL BE 3,500 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
- BEFORE WATER MAINS SHALL BE ACCEPTED AND PUT INTO SERVICE THEY SHALL BE TESTED, REQUIREMENTS ARE AS FOLLOWS:
CHLORINE TEST: TWO CONSECUTIVE DAYS
1ST DAY-50 PPM RESIDUAL
2ND DAY-10 PPM RESIDUAL
TEST POINTS TO BE DETERMINED BY WATER DISTRICT PERSONNEL.
HYDROSTATIC TEST: 150 PSI FOR 2 HOURS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE STATE OF ALL VALVES WITHIN THE AFFECTED AREA OF THE TEST IN THE PRESENCE OF THE INSPECTOR WITNESSING THE TEST.
BACTERIA (COLIFORM) TEST: TWO CONSECUTIVE DAYS TEST POINTS TO BE DETERMINED BY WATER DISTRICT PERSONNEL. ALL TESTING WILL BE WITNESSED BY WATER DISTRICT PERSONNEL.
TRACER WIRE WILL BE TESTED FOR CONTINUITY IN THE PRESENCE OF WATER DISTRICT PERSONNEL.
ALL CONNECTIONS TO EXISTING WATER MAINS WILL BE WITNESSED AND INSPECTED BY WATER DISTRICT PERSONNEL.
- ALL WATER LINES AND SERVICE LINES SHALL HAVE A MINIMUM OF 42" OF COVERAGE.
- VERTICAL CLEARANCE BETWEEN SEWERS AND WATER MAINS SHALL BE A MINIMUM OF 2'-0".
- ALL MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SANITARY SEWER MAIN. THE DISTANCES SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A 10-FOOT SEPARATION, THE DEPARTMENT OF NATURAL RESOURCES MAY ALLOW DEVIATION, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF A WATER MAIN CLOSER TO A SANITARY SEWER, PROVIDED THAT THE WATER MAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELVE LOCATED ON ONE SIDE OF THE SEWER AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE WATER. WATER MAINS CROSSING SANITARY SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER JOINTS. WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATER MAIN. WHEN IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION, THE SANITARY SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO WATER PIPES, AND SHALL BE PRESSURE TESTED TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING. A 3-FOOT HORIZONTAL SEPARATION WILL BE PROVIDED FROM OTHER UNDERGROUND UTILITIES TO INCLUDE GAS, ELECTRIC, TELEPHONE, CABLE TV, ETC.
- CONTRACTOR TO COORDINATE WATER LINE UTILITY CROSSINGS WITH SEWER PROFILES.

TABLE 2: SEEDING REQUIREMENTS

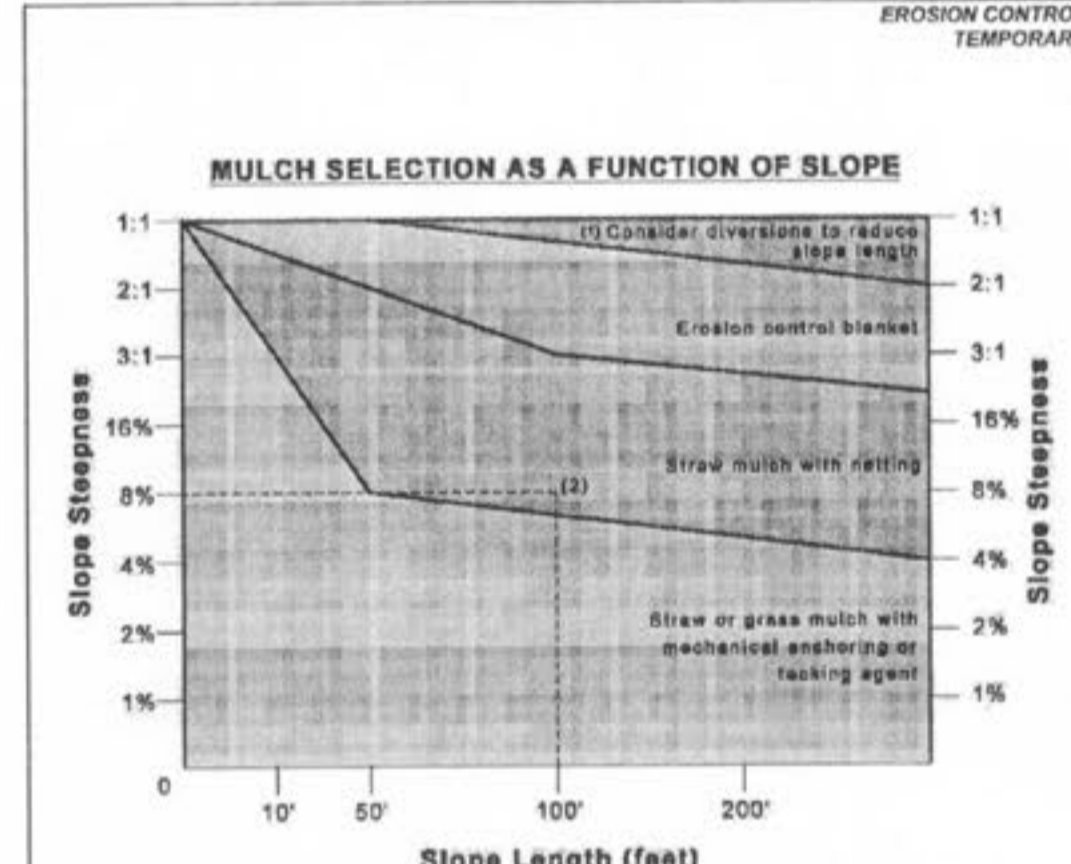
Permanent Seeding	Dates for Seeding											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Topsoil												
Grass/Straw												
Grass/Straw												
Grass/Straw												

Permanent Seeding	Minimum Fertilizer and Seeding Rates	
	Pounds per acre	Pounds per 1000 sq. ft.
Topsoil	200	2.0
Grass/Straw	200	4.0
Grass/Straw	200	8.0
Grass/Straw	200	4.0

Temporary Seeding	Fertilizer per acre		Fertilizer per 1000 sq. ft.	
	1st Day	2nd Day	1st Day	2nd Day
Grass/Straw	80	35	0.8	0.35
Grass/Straw	200	200	2.0	2.0

Fertilizer	Permanent Seeding (pounds per acre)		Temporary Seeding (pounds per acre)	
	1st Day	2nd Day	1st Day	2nd Day
Nitrogen	40	30	40	30
Phosphorus	80	60	80	60
Potassium	80	60	80	60
Urea	160	120	160	120

TABLE 3: MULCH SCHEDULE



- For slopes steeper than 1:1, consider building a diversion above slope to divert water.
- Example: An 8% slope, 100 feet long, requires straw mulch with netting.

GENERAL MULCH RECOMMENDATIONS TO PROTECT FROM SPLASH AND SHEET FLOW

Material	Rate per Area	Installation	Notes
Straw	2 to 2.5 tons	Dry, unchopped, weed-free, avoid weeds	Spread by hand or machine, must be tamped or tied down
Wood Fiber or Wood Chippings	0.5 to 1 ton		Use with fabric underlay. Not to be used in wet areas. Do not use in hot, dry weather.
Wood Chips	5 to 8 tons	As dry. Add nitrogen fertilizer at 12 lb per ton.	Apply with blower, chip handler, or by hand. Not for fine soil areas.
Rock	35 cu. yds.	As dry, unchopped, or hand-spread, or chipped	Apply with blower, chip handler or by hand. Do not use asphalt lock.

REVISIONS

DATE	DESCRIPTION
9/25/07	OWNER/FINISH/DUCKETT CREEK
9/14/07	OWNER COMMENTS
9/14/07	OWNER COMMENTS
10/12/07	CITY OF OTTAWA COMMENTS
10/19/07	CITY OF OTTAWA COMMENTS
10/25/07	CITY OF OTTAWA COMMENTS

DEVELOPER/OWNER

THE JONES COMPANY HOMES, L.L.C.
16640 CHESTERFIELD GROVE, SUITE 200
CHESTERFIELD, MO 63005
PHONE: (636) 537-7192

PRESTON WOODS - PHASE II
IMPROVEMENT PLANS

PRESTON WOODS LANE
OTTAWA, MO. 63366

SPECIFICATION SHEET

planning + engineering + surveying + landscape architecture

Cole and ASSOCIATES
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