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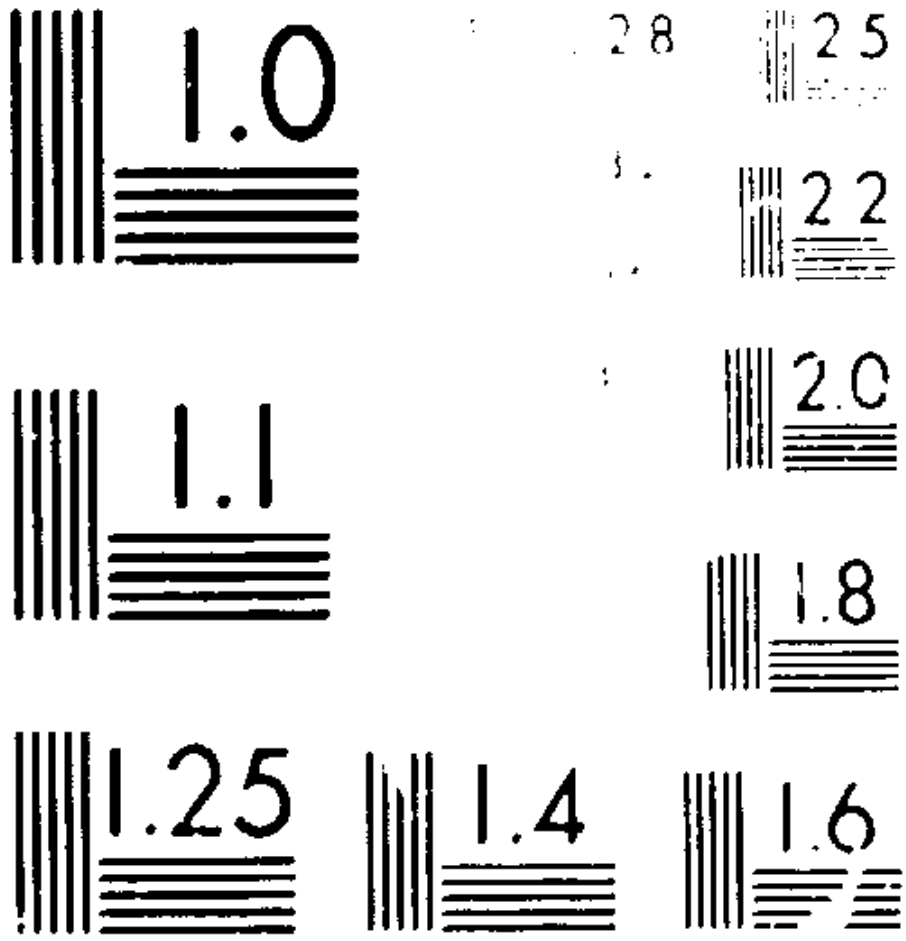
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CONCRETE READY MIX INDUSTRY - EQUIPMENT AND MACHINERY*

by
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THE READY MIXED CONCRETE INDUSTRY IS WELL ESTABLISHED IN AUSTRALIA BUT ITS BEGINNINGS HAD LIMITED ABILITY AND COULD NOT HAVE PRODUCED THE QUALITY OR QUANTITY OF CONCRETE BEING MARKETED TODAY. AS THE TECHNICAL PEOPLE - ENGINEERS, ARCHITECTS, ETECTERA - LEARNED MORE ABOUT READY MIXED CONCRETE AND THE ABILITY TO CONTROL READY MIXED CONCRETE, ITS USE HAS INCREASED DRAMATICALLY WHERE TODAY WE HAVE READY MIXED CONCRETE BEING USED FOR HOUSING, ROADS, FACTORIES, BRIDGES, HIGH-RISE BUILDINGS AND SO ON.

IN A PAPER PRESENTED BY B.N. KELMAN IN 1979 ON "CONCRETE DEMANDS AND CONCRETE RESOURCES IN AUSTRALIA TO THE YEAR 2000", IT WAS NOMINATED THAT READY MIXED CONCRETE ACCOUNTED FOR 55% OF THE TOTAL CEMENT PRODUCED.

TO MAINTAIN THE QUALITY OF READY MIXED CONCRETE, IT HAS BEEN NECESSARY FOR COMMERCIAL CONCRETE COMPANIES TO EMPLOY HIGHLY SKILLED TECHNICIANS TO CONTINUALLY TEST THE PRODUCT IN WELL-EQUIPPED LABORATORIES. THIS HAS ALSO RESULTED IN UPGRADING AND RE-DESIGNING OF THE CONCRETE BATCHING PLANTS TO MEET THE NEEDS OF THE INDUSTRY.

WE HAVE STRICT REGULATIONS AND CODES, SET BY THE AUSTRALIAN STANDARDS ASSOCIATION, WHICH REQUIRE MATERIALS TO BE BATCH WEIGHED TO WITHIN PLUS OR MINUS 1% FOR CEMENTATIOUS MATERIALS, PLUS OR MINUS 2% FOR AGGREGATES AND PLUS OR MINUS 1% FOR WATER. IT IS ALSO NECESSARY TO PROPORTION ADDITIVES TO A FINE TOLERANCE.

I BELIEVE THAT IN AUSTRALIA WE ARE AS ADVANCED AND POSSIBLY MORE ADVANCED IN SOME AREAS THAN ANY OTHER COUNTRY IN THE WORLD. NOT MERELY WITH QUALITY CONTROL, BUT IN THE ECONOMICS OF PRODUCING HIGH STANDARD READY MIXED CONCRETE. AN ECONOMICAL, DURABLE, LOW MAINTENANCE CONCRETE BATCHING PLANT IS THE ANSWER. THE INITIAL FINANCIAL OUTLAY IS USUALLY CONTROLLED BY MARKET REQUIREMENTS AND THIS CONTROLS THE DESIGN AND SIZE OF THE PLANT.

IN DESIGNING THE OPERATION, CONSIDERATION SHOULD BE GIVEN TO THE POSITIONING OF THE PLANT ON THE AVAILABLE LAND TO PROVIDE FOR THE SATISFACTORY MOVEMENT OF VEHICLES INVOLVED. FOR EXAMPLE - TRUCKS DELIVERING AGGREGATES, BULK TANKERS DELIVERING CEMENTATIOUS MATERIALS AND THE TRANSIT MIXERS TRANSPORTING THE FINISHED PRODUCT. ANOTHER ASPECT TO BE CONSIDERED IN DESIGNING THE PLANT LAYOUT IS THE FALL OF THE LAND TO A POINT WHERE PROVISION CAN BE MADE TO COLLECT WASTE WATER CREATED BY HOSING DOWN THE EQUIPMENT. AT THIS LOW POINT IT IS ALSO NECESSARY TO PROVIDE A WA. -OUT AREA FOR THE TRANSIT MIXERS AFTER DELIVERY.

BASICALLY THERE ARE TWO TYPES OF BATCHING PLANTS. ONE WHERE THE AGGREGATES ARE LOADED AS REQUIRED INTO THE AGGREGATE WEIGH HOPPER BY FRONT END LOADER: OR WHERE THE AGGREGATES ARE PRE-STORED IN OVERHEAD BINS ABOVE THE AGGREGATE WEIGH HOPPER. A STANDARD PLANT CONFIGURATION CONVEYS THE AGGREGATE TO THE TRANSIT MIXER FROM THE AGGREGATE WEIGH HOPPER: OR THE WHOLE PLANT CAN BE ELEVATED SUFFICIENTLY TO ENABLE THE TRANSIT MIXER TO LOAD DIRECTLY BELOW THE AGGREGATE WEIGH HOPPER. THIS GRAVITY FEED OPERATION IS NORMALLY SOUGHT WHEN LARGE QUANTITIES OF CONCRETE PER HOUR ARE REQUIRED.

THE MAIN DIFFERENCE IN THE THREE OPERATIONS IS THE SPEED AT WHICH THE CONCRETE CAN BE BATCHED. A PLANT USING A FRONT END LOADER, WITH A BUCKET CAPACITY OF APPROXIMATELY 1.5 METRES, IS CAPABLE OF PRODUCING 40 TO 50 CUBIC METRES OF CONCRETE PER HOUR. WITH THE OVERHEAD AGGREGATE STORAGE AND TOTAL MANUAL OPERATION, THE CAPACITY WOULD INCREASE TO APPROXIMATELY 80 CUBIC METRES PER HOUR. ADDED SOPHISTICATION AND AUTOMATION ON THE OVERHEAD STORAGE PLANT WOULD ALLOW APPROXIMATELY 100 CUBIC METRES PER HOUR TO BE BATCHED. BY USING A GRAVITY FEED OPERATION, IT IS POSSIBLE TO EXCEED 100 CUBIC METRES PER HOUR. DEPENDING UPON THE SPECIFICATION SET FOR THE CONCRETE, A STATIONARY MIXER CAN BE DESIGNED INTO THE BATCHING PLANT. DEPENDING ON THE DESIGN OF THIS MIXER, A CONSISTENTLY HIGHER STANDARD OF CONCRETE CAN BE PRODUCED.

THE AGGREGATES TO BE USED IN THE PLANT FOR THE MANUFACTURE OF READY MIXED CONCRETE ARE NORMALLY DECIDED AFTER TESTING BY THE COMPANY'S TECHNICAL STAFF. WHATEVER THE DESIRED STRENGTHS OF CONCRETE ARE REQUIRED, THE SIZE AND NUMBER OF AGGREGATES ARE SELECTED

SHOULD THE PLANT USE THE FRONT-END LOADER, THE AGGREGATES ARE STORED AT GROUND LEVEL IN VARIOUS WAYS. FOR EXAMPLE, TIMBER, STEEL OR CONCRETE PARTITIONS ARE INSTALLED TO AVOID CONTAMINATION OF THE DIFFERENT AGGREGATES. THE SELECTED AGGREGATES ARE THEN CONSECUTIVELY WEIGHED IN ACCORDANCE WITH THE MIX DESIGNS.

HOWEVER, IF THE PLANT HAS OVERHEAD AGGREGATE STORAGE BINS, THESE ARE PARTITIONED INTO THE DESIRED AMOUNT OF COMPARTMENTS TO STORE THE REQUIRED NUMBER OF AGGREGATES. THESE AGGREGATES ARE NORMALLY CONVEYED FROM GROUND STORAGE BINS TO THE OVERHEAD AGGREGATE BIN. A DIRECTION CHUTE, WHICH CAN BE EITHER MANUALLY OR PNEUMATICALLY OPERATED, SELECTS THE CORRECT COMPARTMENT FOR EACH AGGREGATE, AGAIN WITHOUT CONTAMINATION OF MATERIALS. THE NUMBER OF GROUND STORAGE BINS AND THEIR CONFIGURATION IS DETERMINED BY THE AVAILABILITY OF AGGREGATES AND THE SPEED OF OPERATION REQUIRED. THE AGGREGATES ARE THEN WEIGHED PROGRESSIVELY IN THE AGGREGATE WEIGH HOPPER, LOCATED DIRECTLY UNDER THE STORAGE BIN, BY MEANS OF PNEUMATICALLY OPERATED GEARED GATES, OR WHAT MAY BE CALLED CLAMSHELL GATES.

THE USUAL PLANT CONFIGURATION PROVIDES BULK STORAGE IN SILOS OF VARIED SHAPES AND SIZES FOR CEMENTATIOUS MATERIALS. IT IS COMMON TO HAVE A CEMENT STORAGE SILO AND, IF POZZOLANS (OR FLYASH) IS AVAILABLE, ANOTHER SILO IS PROVIDED. IT IS NOT UNUSUAL TO HAVE ADDITIONAL STORAGE SILOS FOR DIFFERENT TYPES OF CEMENT - FOR EXAMPLE, ORDINARY PORTLAND CEMENT, HIGH EARLY STRENGTH CEMENT, LOW HEAT CEMENT, SULPHUR RESISTANT CEMENT OR COLOURED CEMENTS. THESE STORAGE SILOS ARE GENERALLY DESIGNED TO BE ELEVATED ABOVE THE TRANSIT MIXER LOADING POINT. WHERE IT BECOMES NECESSARY TO DESIGN MULTIPLE SILOS INTO THE PLANT, THE MATERIAL IS TRANSFERRED TO THE CEMENT WEIGH HOPPER THROUGH AN AIRSLIDE. IT IS GOOD PRACTICE TO USE AN ANGLE OF 10 DEGREES OR GREATER FOR THE AIRSLIDE TO ENSURE THE SMOOTH FLOW OF CEMENTATIOUS MATERIALS.

IT IS DESIRABLE TO HAVE THE CEMENT WEIGH HOPPER DIRECTLY BELOW THE CEMENT STORAGE SILO DISCHARGE, WITH THE TRANSIT MIXER LOADING DIRECTLY BELOW THE CEMENT WEIGH HOPPER DISCHARGE. THE REASON FOR THIS CONFIGURATION IS TO ENSURE THE CEMENT WEIGHING IS AS ACCURATE AS POSSIBLE. BY HAVING THE SILO DISCHARGE CONTROL GATE CLOSE TO THE CEMENT WEIGH HOPPER, IT REDUCES THE AMOUNT OF CEMENT THAT WILL FALL INTO THE WEIGH HOPPER AFTER THE CONTROL GATE HAS BEEN CLOSED.

WE REFER TO THIS AS "IN AIR CEMENT". IF THE CEMENT WEIGH HOPPER DISCHARGES DIRECTLY INTO THE TRANSIT MIXER, AND THE SCALE HAS REGISTERED ZERO. IT IS ONLY FAIR TO ASSUME THAT ALL THE CEMENTATIOUS MATERIAL IS INSIDE THE TRANSIT MIXER. THE CEMENTATIOUS MATERIAL IN READY MIXED CONCRETE IS THE MOST IMPORTANT INGREDIENT IN CONTROLLING THE STRENGTH OF THE CONCRETE. AS IT IS ALSO THE MOST EXPENSIVE MATERIAL, GOOD CONTROL IS ABSOLUTELY ESSENTIAL. THE MOST COMMON METHODS OF CONTROL USED IN AUSTRALIAN PLANTS ARE PNEUMATICALLY OPERATED BUTTERFLY VALVES, OR PNEUMATICALLY OPERATED HALF ROTARY GATES.

THE CEMENTATIOUS MATERIALS ARE TRANSPORTED TO THE CONCRETE PLANT SITE BY BULK TANKERS. THE TANKER DISCHARGES ITS LOAD INTO THE SILO THROUGH A PIPE, 100 MILLIMETRES IN DIAMETER, BY MEANS OF COMPRESSED AIR. THIS THEN CREATES A PROBLEM WHERE IT IS NECESSARY TO ALLOW THE AIR TO ESCAPE FROM THE SILO AND STILL RETAIN THE CEMENTATIOUS MATERIALS. AS THE POLLUTION CONTROL BODY IN THIS COUNTRY HAS SET RATHER STRICT GUIDELINES, IT HAS BECOME NECESSARY TO INSTALL FILTER SYSTEMS TO CONTROL THE DUST EMISSION. THIS EQUIPMENT VARIES ACCORDING TO DIFFERING MANUFACTURERS DESIGNS, BUT THE MOST COMMON TYPE OF FILTER HAS A SPECIALLY DESIGNED FILTER MEDIA CLOTH WHICH IS CLEANED BY A SMALL ELECTRIC MOTOR WITH A CAM OPERATED SHAKER SYSTEM. IN SOME AREAS PROVISION CAN BE MADE FOR A MORE EFFICIENT SYSTEM WHERE THE FILTER MEDIA IS CLEANED BY A REVERSE JET OF AIR AND A LARGE SUCTION FAN IS USED TO GATHER DUST AT THE TRANSIT MIXER LOADING POINT. IF THE DUST COLLECTION SYSTEM AT THIS POINT IS NOT USED, AN ARRANGEMENT OF WATER FOGGING SPRAYS CAN BE USED. THIS IS NORMALLY CONTROLLED WITH A SOLENOID CONTROL VALVE COUPLED TO THE DISCHARGE GATE SO THAT WHEN THE MATERIAL IS BEING DISCHARGED, THE FOGGING SPRAYS AUTOMATICALLY OPERATE.

WATER, AN IMPORTANT INGREDIENT IN READY MIXED CONCRETE, CAN BE MEASURED IN VARIOUS WAYS, BUT USUALLY THROUGH A METERING SYSTEM. HOWEVER, THE MORE SOPHISTICATED PLANTS WEIGH THEIR WATER. THIS WEIGHING METHOD IS NOT ONLY UNDERTAKEN FOR A DEGREE OF ACCURACY, BUT ALSO FOR SPEED OF OPERATION, AND HAS PROVEN TO BE AN ASSET IN THE RECYCLING OF WATER FROM THE DRAINAGE AND TRANSIT MIXER WASH-OUT PIT. AS THIS WATER CONTAINS AN AMOUNT OF SOLIDS AND FREE LIME, THE NORMAL METERING SYSTEM WOULD BE AFFECTED. IN SOME PLANT LOCATIONS A LIMITED WATER SUPPLY IS AVAILABLE, OR WATER MAY HAVE TO BE PURCHASED, OR WHEN WASH-OUT WATER IS NOT ALLOWED TO BE

DISPERSED INTO THE DRAINAGE SYSTEM, IT BECOMES MORE DESIRABLE TO RE-CYCLE ALL THE AVAILABLE WATER.

MANY OF THE SMALL PLANTS OPERATE ON A MECHANICAL SCALE WHICH HAS A SET OF LEVERS MOUNTED ON THE WEIGH HOPPER AND A TRANSFER LEVER OPERATING AN ANALOGUE DIAL APPROXIMATELY 600 MILLIMETRES IN DIAMETER. THESE DIALS ARE GRADUATED IN 5 KILOGRAM INCREMENTS FOR THE WEIGHING OF CEMENT AND 20 KILOGRAM INCREMENTS FOR THE WEIGHING OF AGGREGATES. THIS HAD BEEN THE ACCEPTED PRACTICE AND MANY PLANTS TODAY STILL OPERATE WITH THIS SYSTEM.

AS A MEANS OF AUTOMATING THE WEIGHING SYSTEM, THE INDUSTRY ADVANCED TO A PHOTO-ELECTRIC CELL WHICH WAS MOUNTED ON AN ADJUSTABLE ARM ON THE SCALE DIAL. THIS ENABLED THE OPERATOR TO PRE-SET THE REQUIRED AMOUNT OF MATERIAL AND WHEN THE INDICATOR REACHED THE CUT-OFF POINT, A SIGNAL WAS SENT TO THE SOLENOID CONTROL VALVE AT THE DISCHARGE GATE TO CUT OFF THE FLOW OF MATERIAL. HOWEVER, THIS OPERATION WAS FOUND TO HAVE SOME PROBLEMS AND WITH THE ADVANCEMENT OF ELECTRONICS, THE INDUSTRY THEN USED ELECTRONIC LOAD CELLS IN PLACE OF LEVERS.

THE LOAD CELLS BEING USED AT THIS TIME WERE A COMPRESSION [illegible] LOAD CELL AND MOUNTING OF THESE ON THE WEIGH HOPPERS PROVED TO BE A DIFFICULT TASK AS THE SMALLEST AMOUNT OF DEFLECTION IN THE STRUCTURAL STEEL CAUSED ERRATIC READINGS. IT BECAME NECESSARY TO MOUNT THESE IN TENSION COMPRESSION YOKES TO OVERCOME THE PROBLEMS. THE AMBIENT TEMPERATURES ALSO AFFECTED THIS TYPE OF LOAD CELL AND INSULATION HAD TO BE PROVIDED TO STABILIZE THE SITUATION. THIS LOAD CELL WAS COUPLED TO AN ANALOGUE DIAL AND PRE-SETTING OF MATERIALS WAS CARRIED OUT BY SET POINT CONTROLS. THE ADVANTAGE IN THIS METHOD OF WEIGHING WAS THE ABILITY TO PLACE THE OPERATOR IN A DESIRABLE POSITION WITHOUT BEING CONTROLLED BY THE LENGTH OF THE TRANSFER LEVER USED ON THE MECHANICAL SCALES.

THE NEXT ADVANCEMENT IN THE WEIGHING OF MATERIALS IS A SYSTEM WE CALL "LEVERTRONICS". WITH THIS SYTEM WE HAVE THE WEIGH HOPPER MOUNTED IN THE STANDARD LEVERS AND IN PLACE OF A TRANSFER LEVER TO THE MECHANICAL DIAL HEAD, A SMALL TENSION-TYPE LOAD CELL IS MOUNTED AT THIS POINT. AS THIS LOAD CELL IS OF MORE MODERN DESIGN, THE PROBLEM CAUSED BY AMBIENT TEMPERATURE HAS BEEN OVERCOME. THIS LOAD CELL WILL OPERATE IN TEMPERATURES FROM MINUS 10 DEGREES CELSIUS TO 50 DEGREES CELSIUS. WITH THIS SYSTEM WE USE A SOLID

STATE MICRO-PROCESSOR BASED DIGITAL READ-OUT AND A MUCH SMALLER PRE-SET. THIS HAS ALLOWED US TO DESIGN THE OPERATOR'S AREA INTO A MORE COMPACT CONSOLE AND AGAIN WITH THE USE OF THE LOAD CELL, WE CAN PLACE THE OPERATOR IN A MORE ADVANTAGEOUS POSITION.

TO MEET THE REQUIREMENTS OF SOME PROJECTS, IT IS NECESSARY TO RECORD THE WEIGHT OF ALL MATERIALS USED IN EACH BATCH OF CONCRETE. WITH THE USE OF SOPHISTICATED ELECTRONICS AND A MICRO-PROCESSOR, WE ARE NOW ABLE TO RECORD THE INDIVIDUAL NETT WEIGHTS OF ALL MATERIALS EVEN THOUGH THE AGGREGATES ARE ALL WEIGHED PROGRESSIVELY IN ONE HOPPER AND THE CEMENTATIOUS MATERIALS ARE ALSO WEIGHED IN ONE HOPPER.

THE NEXT STAGE OF AUTOMATION IS TO EMPLOY THE USE OF A COMPUTOR. THIS ENABLES THE COMPLETE PROGRAMMING FOR BATCHES OF CONCRETE AND TOTAL AUTOMATIC WEIGHING AND RECORDING. THIS SYSTEM INCORPORATES AN INTELLIGENT PRINTER AND AGAIN RECORDS THE INDIVIDUAL WEIGHTS OF ALL MATERIALS. OF COURSE, AS YOU CAN WELL IMAGINE, WITH THE USE OF A COMPUTOR, MANY AND VARIED FUNCTIONS BECOME AVAILABLE. THIS METHOD OF OPERATION IS CURRENTLY IN USE FOR THE CONSTRUCTION OF THE WIVENHOE POWER STATION AND ON YOUR VISIT TO THIS PROJECT A CLOSER INSPECTION CAN BE MADE.

BECAUSE OF THE NECESSITY TO PROVIDE AIR TO AERATE THE CEMENTATIOUS MATERIALS TO DISCHARGE THEM FROM THE STORAGE SILOS AND THE CEMENT WEIGH HOPPER, IT HAS BEEN FOUND THAT THE MOST ECONOMICAL METHOD OF CONTROL FOR THE OPERATION OF THE GATES IS BY MEANS OF PNEUMATIC RAMS. THEREBY, ONE COMPRESSOR IS USUALLY SUFFICIENT TO OPERATE THE ENTIRE PLANT. BATCH CONTROL IS EITHER BY MANUAL CONTROL VALVES OR ELECTRONIC SOLENOID CONTROL VALVES. IT IS, OF COURSE, NECESSARY TO USE SOLENOID CONTROL VALVES WHEN ELECTRONIC AUTOMATION IS INSTALLED IN THE PLANT. THE SOLENOID CONTROL VALVE HAS A MORE POSITIVE ACTION BECAUSE THE CONTROL VALVE IN THIS INSTANCE IS MOUNTED ADJACENT TO THE GATE IT IS OPERATING. WITH THE MECHANICAL CONTROL VALVES BEING POSITIONED IN A CONSOLE FOR EASE OF OPERATION, THE AIR HAS TO TRAVEL QUITE SOME DISTANCE TO OPERATE THE PNEUMATIC RAMS ON THE GATES.

IT IS NECESSARY TO FILTER THE AIR FROM THE COMPRESSOR TO ENSURE CLEAN, DRY AIR FOR THE AERATING OPERATION, BUT IT IS ALSO NECESSARY TO PROVIDE LUBRICATED AIR TO THE CONTROL VALVES AND PNEUMATIC RAMS. THE AIR USED IN AERATING IS REDUCED IN PRESSURE BY A REGULATOR, AS THE COMPRESSED AIR IS BEING DELIVERED AT 700 TO 800 KILOPASCALS AND THE AIR REQUIRED FOR AERATING WOULD BE BETWEEN 100 TO 200 KILOPASCALS. IN AERATING WE ARE LOOKING FOR A HIGH VOLUME OF AIR AT COMPARATIVELY LOW PRESSURE. TO ECONOMISE ON THE AMOUNT OF AIR USED IN THE OPERATION OF THE PLANT, THE LOW PRESSURE AERATING AIR IS CONTROLLED BY A PILOT VALVE. THIS PILOT VALVE IS AUTOMATICALLY OPENED AND CLOSED BY THE OPERATION OF THE CONTROL VALVE, THEREFORE AERATING AIR IS ONLY USED WHEN THE CONTROL VALVE OPENS ONE OF THE DISCHARGE GATES. THE MOMENT THE DISCHARGE GATE IS CLOSED, THE PILOT VALVE AUTOMATICALLY CUTS THE SUPPLY OF AERATING AIR.

THREE TYPES OF CONTROL VALVES ARE GENERALLY USED: ONE IS A TWO-POSITION VALVE THAT AUTOMATICALLY SPRINGS TO THE "OFF" POSITION WHEN RELEASED. THIS VALVE CAN BE USED ON EITHER CEMENTATIOUS MATERIALS BEING DISCHARGED INTO THE CEMENT WEIGH HOPPER OR AGGREGATES FROM THE OVERHEAD AGGREGATE STORAGE BEING DISCHARGED INTO THE AGGREGATE WEIGH HOPPER, AND IN THE CASE OF WATER WEIGHING, WATER BEING DISCHARGED INTO THE WATER WEIGH HOPPER. THIS ENABLES THE OPERATOR TO SIMPLY RELEASE THE CONTROL VALVE AND THE DISCHARGE GATE AUTOMATICALLY CLOSES.

THE SECOND TYPE IS AGAIN A TWO POSITION VALVE BUT DOES NOT AUTOMATICALLY RETURN TO THE CLOSED POSITION. THIS ALLOWS THE OPERATOR TO DISCHARGE MATERIALS FROM THE WEIGH HOPPERS SIMULTANEOUSLY WITHOUT HAVING TO HOLD SEVERAL CONTROL VALVES OPEN AT THE ONE TIME.

THE THIRD TYPE IS A THREE-POSITION-CONTROL VALVE USED ONLY ON CEMENT DISCHARGE. THIS ENABLES THE OPERATOR TO PARTIALLY OPEN THE CEMENT DISCHARGE GATE AND RETAIN CONTROL OVER THE RATE OF DISCHARGE. THIS METHOD OF OPERATION IS THE MOST COMMON AS THE PROCEDURE FOR LOADING THE TRANSIT MIXER (AFTER ALL MATERIALS HAVE BEEN WEIGHED) IS FOR THE OPERATOR TO DISCHARGE APPROXIMATELY 80 TO 90% OF THE WATER INTO THE MIXER, THEN BEGIN THE AGGREGATE DISCHARGE. AS SOON AS THE AGGREGATES BEGIN TO ENTER THE MIXER, THE CEMENTATIOUS MATERIAL IS DISCHARGED AT THE SAME TIME. THE NECESSITY FOR THE CONTROL OVER THE CEMENTATIOUS MATERIAL IS BECAUSE

THERE IS ONLY A SMALL PERCENTAGE OF THE TOTAL QUANTITY COMPARED TO THE AGGREGATES USED, AND IT IS DESIRABLE TO HAVE A GRADUATED FEED OF CEMENTATIOUS MATERIALS GOING INTO THE TRANSIT MIXER FOR ALMOST THE ENTIRE PERIOD OF TIME TAKEN TO DISCHARGE THE AGGREGATES. THIS ENSURES BETTER MIXING IN THE TRANSIT MIXER AND REDUCES THE RISK OF THE CEMENTATIOUS MATERIALS FORMING A BALL AND NOT BEING MIXED EASILY WITH THE AGGREGATES AND WATER. THE REMAINING WATER IS THEN DISCHARGED, WASHING THE LAST OF THE AGGREGATES AND CEMENTATIOUS MATERIAL INTO THE MIXING AREA OF THE TRANSIT MIXER.

I HAVE ENDEAVOURED TO OUTLINE THE STANDARD CONFIGURATIONS AVAILABLE OF BASIC READY MIXED CONCRETE PLANTS, ALTHOUGH VARIOUS CONFIGURATIONS CAN BE FOUND IN THIS COUNTRY. QUITE OFTEN THE DESIGN IS CONTROLLED BY THE AVAILABILITY OF LAND, THE CONCRETE COMPANY'S SPECIFICATIONS AND REQUIREMENTS, OR THE TYPE OF READY MIXED CONCRETE TO BE PRODUCED.