MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA

25 March 2019

[redacted]

Dear [redacted]

Thank you for your email of 14 February 2019 to Napier City Council requesting the following information:

1. *I am seeking please the engineering reports for both the Ivan Wilson Memorial Pool and the Greendale Pool which have been deemed earthquake prone (although I understand they may not still be prone).*

2. *It would be helpful if the council was able to provide any supporting information about who the engineering firm was that signed off the original designs of both pools and then any subsequent seismic checks done in the interim.*

On 27 February 2019, Napier City Council transferred part of your request to the Ministry, namely, the part about Greendale Pool. Your request has been considered under the Official Information Act 1982 (the Act).

In relation to point one, please find the engineering report for Greendale Pool (*Detailed Seismic Assessment* dated 12 April 2016) attached as **Appendix A**. Please note, this version supersedes all previous iterations.

In relation to point two, I am refusing part of your request for the engineering firm who signed off on the original design of this pool under section 18(e) of the Act as the requested information cannot be found, despite reasonable efforts to locate it.

The swimming pool facility was closed by the Taradale School Board of Trustees at the end of 2016 due to health and safety and structural issues, and remains closed. No subsequent seismic checks have been done since the 12 April 2016 report (**Appendix A**). The two seismic checks which were completed prior to the aforementioned report are referenced in section 2.3.

Please note, the Ministry now proactively publishes OIA responses on our website. As such, we may publish this response on our website after five working days. Your name and contact details will be removed.

National Office, Mātauranga House, 33 Bowen Street, Wellington 6011
PO Box 1666, Wellington 6140. Phone: +64 4 463 8000 Fax: +64 4 463 8001

Thank you again for your email. You have the right to ask an Ombudsman to review this decision. You can do this by writing to info@ombudsman.parliament.nz or Office of the Ombudsman, PO Box 10152, Wellington 6143.

Yours sincerely

Kim Shannon
Head of Education Infrastructure Service

Appendix A

CREATE
SPECIALIST CONSULTANT ENGINEERS

Detailed Seismic Assessment

Taradale Primary School Swimming Pool Enclosure, Ngarimu Crescent, Taradale, Napier

For: Taradale Primary School

Ref No: 1163.1
12th April 2016
Revision V4 - (Supersedes Version 3 issued 8th April 2016 as DRAFT for Review)

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CONTENTS

1 EXECUTIVE SUMMARY

This building report provides the results of a Detailed Seismic Assessment completed for Taradale Primary School Swimming Pool Enclosure, located at Ngarimu Crescent in Taradale, Napier. The report provides a detailed assessment of the building's %NBS seismic capacity, highlights the key seismic risks and presents recommendations for improvements to mitigate potential risks.

The Building is single level, originally constructed in 1984, and is approximately 650m^2 on plan. Construction consists of profile metal cladding to the south and translucent sheeting to the north, both supported on timber purlins and steel portal frames. The walls generally consist of concrete block masonry, which are tied to the frames at the knee through metal brackets and embedded bolts. The Importance level assumed is IL2. We have used an available ductility of 1.25 in our assessment as the portal frames are tied to and bounded by concrete block walls, and the material condition of the frames in the potential yielding region is very poor.

One of the significant features affecting the earthquake performance of the building apparent from the offset, and as identified in previous reporting, was the material condition of the primary structural elements. We therefore undertook an initial detailed assessment of earthquake performance of the building on the basis that the full section capacity was available, ignoring the effects of loss of section capacity through degradation. This was to obtain a general view of the overall earthquake performance had no loss of section capacity through degradation occurred, and to inform our assessment strategy.

The outcome of this assessment showed that the maximum possible earthquake performance expected without material loss would be 25%NBS, limited by the connections of the portal frame to the walls & foundations. Should these elements be remediated, an earthquake capacity of the order of 50%NBS would have been expected.

However, it is clear that loss of section capacity has occurred, including in critical locations, and that material testing to determine actual available section capacity would in all probability result in reduced earthquake performance. Remediation of the structural elements would likely be a difficult and expensive exercise, further overlaid by wider compliance and maintenance items of the facility outside of earthquake performance. Based on the above, we therefore did not consider that further investigations were cost effective, would be of benefit to the outcome of this assessment or in the best interests of the owners at this time.

Given the fact that degradation has occurred, and in the absence of specific material testing, we applied a reasonable reduction of section capacity to obtain an improved representation of the earthquake capacity of the building. This reduction is based on visual observations and engineering judgement only, and would likely vary between professional and reviewing agencies. On this basis, the section capacity considered to remain available has been estimated to be between 60% and 80%.

On the basis of the above, we find the building achieves an approximate earthquake performance value of less than 20% New Building Standard, and as such is assessed as Grade E. The building is therefore 'Earthquake Prone' as defined by the New Zealand Building Act 2004, having an available earthquake performance less than 33% New Building Standard. The assessed seismic capacity of the building represents elevated risk to the occupants over minimum acceptable levels as defined in the New Zealand Building Act 2004. We caution that without the required proper maintenance, the available capacity of the structural system will continue to diminish.

Potential risk to life from continued occupancy due to the earthquake capacity of the building being exceeded, is reduced through conducting the remedial works specified in Section 8 of this report promptly (5 – 10 working days).

Improvement works are therefore required to increase the earthquake capacity to at least 33% NBS to comply with minimum New Zealand Building Act 2004 requirements, and at least 67% NBS to meet New Zealand Society for Earthquake Engineering recommendations.

Our assessment identified the key limiting features of the building are as follows:

1. Material loss through degradation of primary structural elements including the timber purlins and the steel portal frames and fixings
2. Connections of the portal frame to the walls & foundations.

A potential failure mechanism by which the purlins detach from the steel frames presents a key life safety hazard to occupants.

Other limiting features of the building are generally as follows:

- Discontinuity of the roof plane diaphragm to the south, resulting in additional stress to the portal frame at this location.
- Potential displacement incompatibilities of the various lateral load resisting systems

We advise that development of a remedial strategy to improve the seismic performance of the building should consider the following:

To improve the seismic performance of the building to achieve at least 33% NBS, the remediation of the portal frame connections to foundations and concrete block masonry elements would need to be undertaken. Refer to section 8 for a temporary strengthening solution. We note that reported capacity is dependent on our reasonable assessment of available section capacity due to degradation without the benefit of more thorough and invasive investigations. Further, available capacity will continue to reduce should degradation continue unabated.

To improve the seismic performance of the building to achieve at least 67%, in line with NZSEE recommendations, we advise that development of a wider remedial strategy should consider the following earthquake performance items:

- Improve portal frame connection capacity to concrete masonry elements and foundation system, as per remedial strategy above
- Assessment and improvement of the corrosion of the steel frames and decay of the timber purlins should be undertaken in conjunction with a wider improvement strategy to improve earthquake performance and address other potential facility compliance and maintenance issues.
- Undertake destructive investigations of the concrete block masonry walls to positively verify the reinforcement content and therefore available capacity.
- Improve connections of purlins to frames.
- Improve foundation to southern portal frame columns.
- Improve connection of the strut connection to the southern portal frame column.
- Replace existing hybrid roof plane bracing system with balanced system, to provide for complete and symmetrical load paths, reducing torsional effects, eccentric connections, and increase in stress of the existing portal frame.
- Undertake geotechnical assessment of site to verify and validate long term benefit of improvement investment.

Consideration of remedial works is at this time beyond the scope of our current engagement.

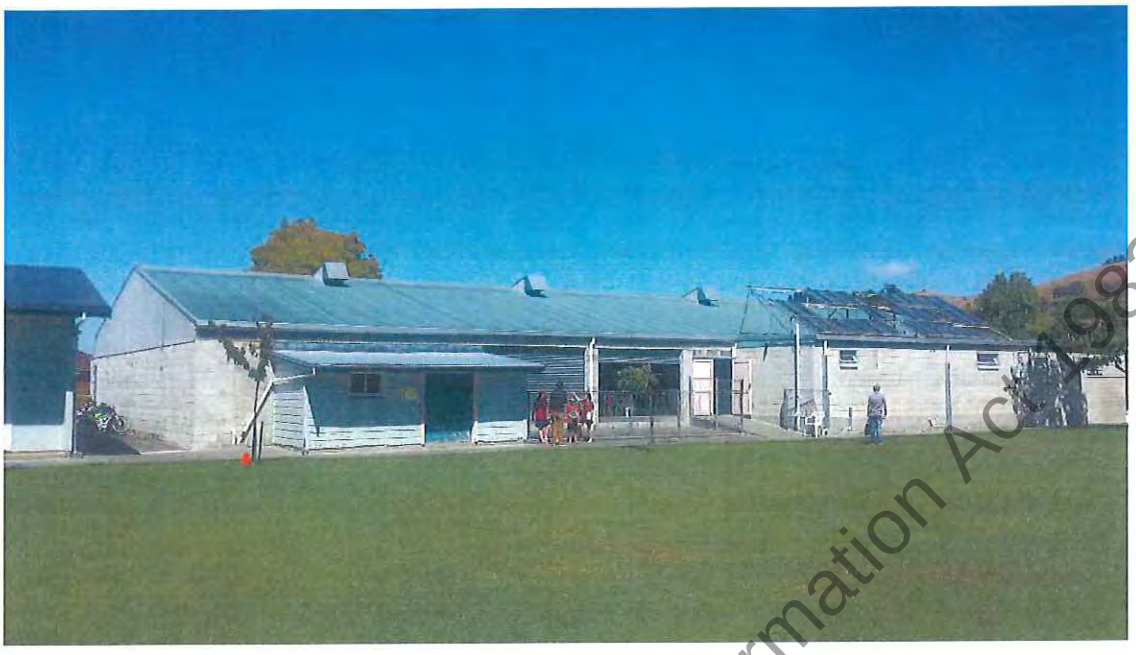


FIGURE 1: Exterior Views of Greendale Swimming Pool Enclosure

2 INTRODUCTION

2.1 BRIEF

CREATE Ltd have been engaged to undertake a Detailed Seismic Assessment of the Taradale Primary Swimming pool enclosure (also known as Greendale Pool), located at Ngarimu Crescent, Taradale, Napier.

We are to report the seismic performance in terms of the capacity of what a new building constructed to current building standards on the same site would be required to achieve. This is to be presented as a percentage of New Building Standard (NBS).

The scope of our engagement excludes any assessment, either conceptual or by qualitative analysis, of any improvements that may be required to increase the performance of these buildings in earthquakes.

2.2 LEGISLATIVE REQUIREMENTS

Section 122 of The New Zealand New Building Act 2004 requires that all buildings have sufficient strength such that their ultimate capacity is not exceeded in a moderate earthquake. A moderate earthquake means an earthquake that is one third of that which would be used to design a new building on the same site. If a building does not achieve this standard it is considered to be "Earthquake Prone".

The seismic capacity of an existing building is normally expressed as a percentage of New Building Standard (NBS). In this manner a building with a seismic capacity of 33%NBS or less is considered to be Earthquake Prone. This value represents approximately 10 to 20 times the risk of a building on the same site constructed to New Building Standards. If a building has been determined to be Earthquake Prone, the Building owners are obliged to prepare and implement a proposal to improve the structural performance during an earthquake to in excess of 33%NBS.

Whilst not a legislative requirement, New Zealand Society for Earthquake Engineering (NZSEE) recommends that *"buildings with < 67%NBS be seriously considered for improvement of structural performance, at least when major alterations or refurbishments are contemplated."* Aligning with this recommendation, we understand that the Ministry of Education has a medium term goal of a minimum seismic capacity of 67% for Buildings.

The value of 67%NBS represents approximately 3 times the risk of failure of a Building on the same site constructed to New Building Standards.

2.3 PREVIOUS EARTHQUAKE ASSESSMENTS

2.3.1 Condition & Compliance Assessment, prepared by CREATE, dated 16.06.15

CREATE undertook a Condition and Compliance Assessment of the pool enclosure and reported 16.06.15. The scope of this review was to undertake a preliminary Seismic Assessment to establish the Potential Seismic Performance and where key issues lie in the form of Potential Critical Structure Weakness CSWs.

This report concluded that based solely on the date of construction and assuming the building meet all aspects of structural compliance at the time, the Seismic Performance could reasonably been estimated to sit around 60% NBS.

Key Elements observed on site that potentially form CSWs:

- Significant degradation of steel portal base details could undermine the ability to resist loads during a seismic event.
- Partial Roof Diagram - insufficient evidence that the roof diaphragm is complete over the bleacher side of the pool.

- Gable end wall Restraint - insufficient evidence that there is effective out of plane restraints to the concrete block wall.
- Degradation of Roof timbers – evidence of significant degradation of the roof timbers below the Durolite.

2.3.2 Initial Seismic Assessment subsequently prepared by Aurecon, dated 22.09.15

We have been supplied an Initial Seismic Assessment (ISA) undertaken on the building by Aurecon on behalf of the Ministry of Education and dated 22.09.15. As a result of this assessment the building was provisionally graded as "Potentially Earthquake Risk", with a potential earthquake performance of greater than 33%NBS but less than 67%NBS, and a seismic grade of C.

The IEP provides a quick, high-level and qualitative measure of the buildings performance using the least resource possible.

Aurecon's assessment reported as follows:

- *"The building has a seismic capacity of 40%NBS. This is lower than the MOE medium term goal minimum seismic capacity of 67% NBS. It is recommended a Detail Seismic Assessment is obtained prior to commencing any design for remediation in the future."*
- *"Corrosion of the steel portal frames and decay of the timber are specific critical structural weaknesses."*
- *"The steel cross roof braces appear to be discontinuous; this is a potential critical structural weakness."*

3 BUILDING DESCRIPTION

3.1 OVERVIEW

The original building was constructed in 1984. Original drawings were not available.

Minor improvements, alterations and an extension was undertaken in 1998. Primarily this involved a minor extension to the west, adding a store, office, and modifying and extending the change rooms. The construction of these works generally matched the existing.

In 1999 improvements were undertaken to add bleachers to the south, replace the roof construction to the southern side of the pool enclosure, and undertake minor earthquake improvements. The latter primarily consisted of the installation of bracing struts from the frames to the south side of the hall, and the installation of 9mm compressed sheeting (cement fibre board) acting as a diaphragm to the southern side of the roof.

We understand the Facility is currently owned by Taradale Primary School and sited on Ministry of Education Land. The Facility is currently operated by Greendale Swimming Club.

We understand that the facility is used predominately for private Learn to Swim, but the swimming club regularly holds club meets at the facility.

FIGURE 2: Satellite imagery of property and Greendale Pool enclosure

3.2 HISTORICAL SIGNIFICANCE

It is our understanding that the Building is not on The New Zealand Heritage List.

3.3 GENERAL CONSTRUCTION

The Building is single level and consists of profile metal cladding to the south and translucent sheeting to the north supported on timber purlins and steel portal frames. The roof composition to the south under the profiled metal cladding consists of 9mm compressed sheet supported on timber blocking between the existing purlins. The walls generally consist of concrete block masonry, which are tied to the frames at the

knee through metal brackets and embedded bolts. The building structure is supported on concrete foundations and tied into a concrete slab, both on-grade.

FIGURE 3: View to west of 1998 extension

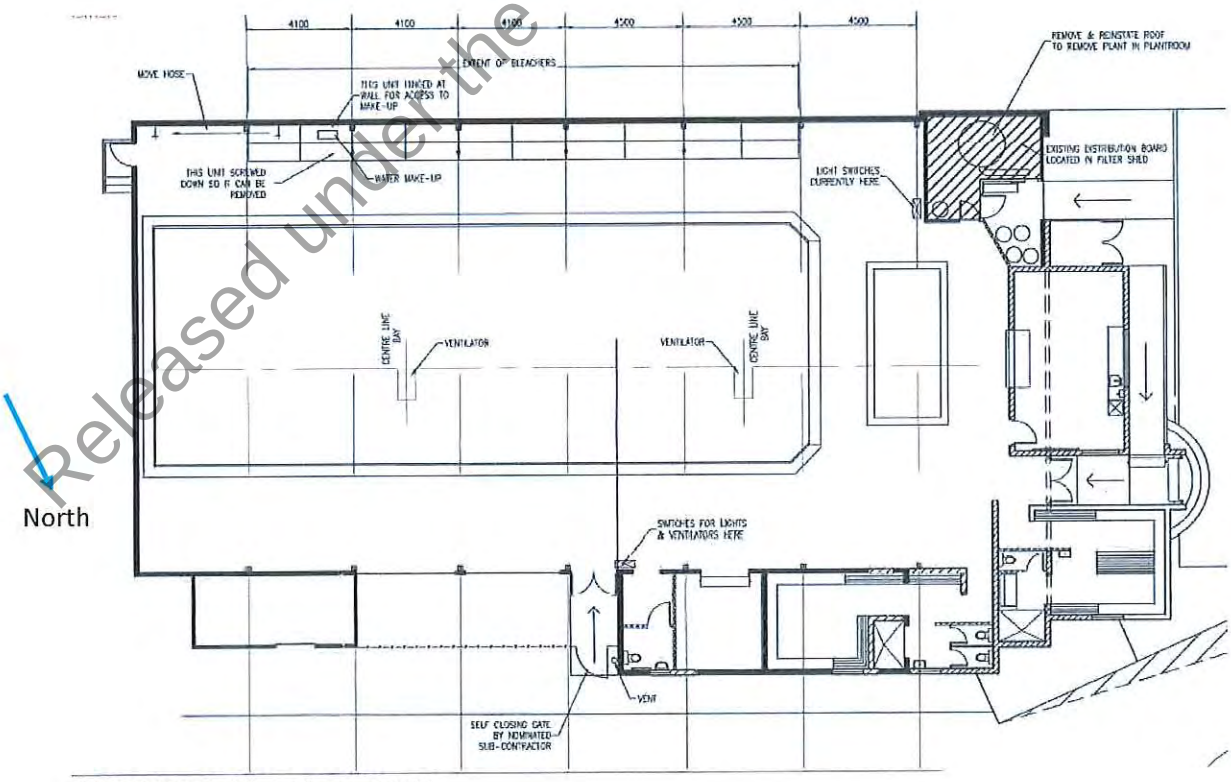


FIGURE 4: Typical floor plan as at 1999

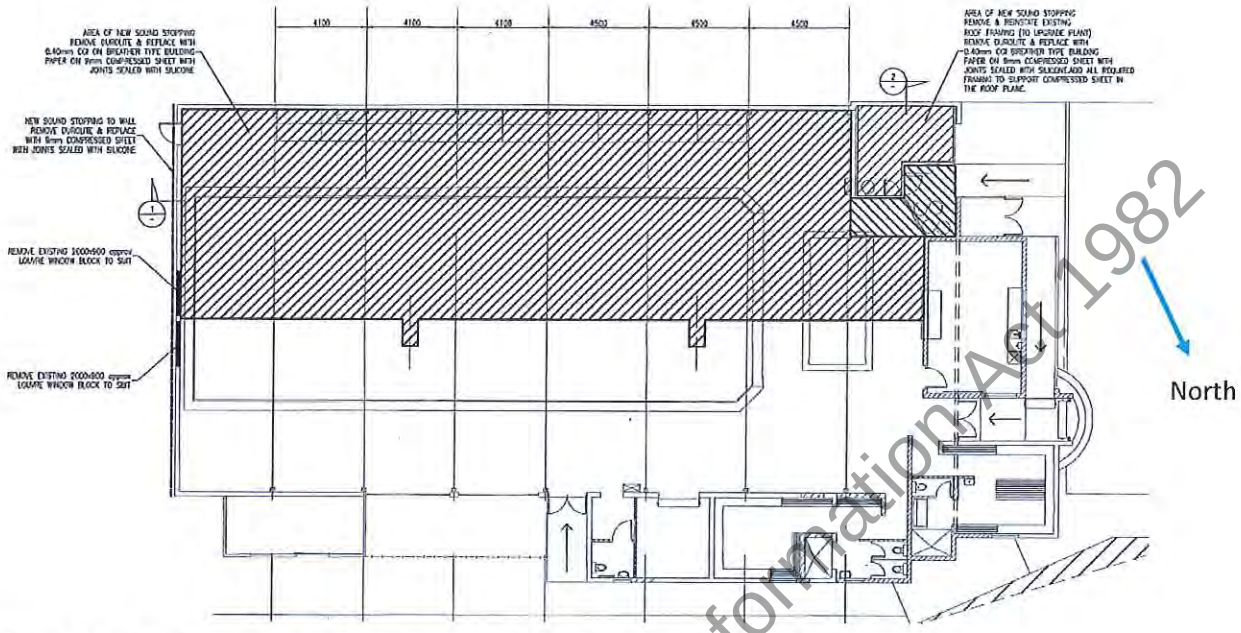


FIGURE 5: Floor plan showing extent of cement fibre sheeting (hatched), installed in 1999

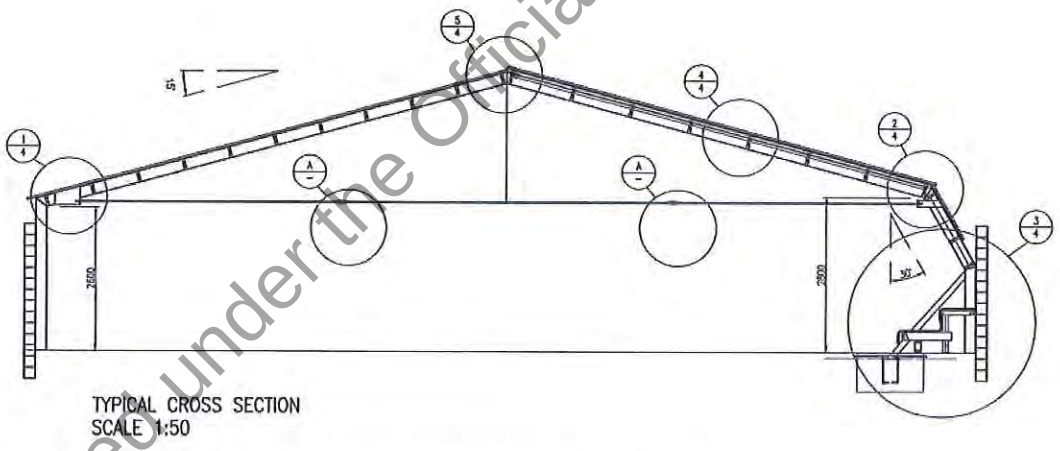


FIGURE 6: Typical cross section following improvement works undertaken in 1999

3.4 STRUCTURAL SYSTEM

The gravity loads from the roof are transferred through the steel portal frames and concrete masonry block end walls to the ground via foundations.

Earthquake forces acting on the pool enclosure in the north-south direction, **transverse** to the building, are primarily resisted by the steel portal frames. The concrete masonry block walls are tied to and supported by the frames, with the end wall to the east resisting earthquake forces through in plane shear.

Earthquake forces acting on the pool enclosure in the east-west direction, **longitudinal** to the building, are resisted through steel tension bracing to the north, transferring earthquake forces to the concrete block masonry walls acting through in plane shear. To the south, earthquake forces are transferred by the roof plane diaphragm to the concrete block masonry walls acting through in plane shear. This diaphragm is

discontinuous at the eave, resulting in transfer of earthquake forces through minor bending of the rafter of the steel frame. Stability of the concrete masonry block end wall to the east is by cantilever action.

The concrete masonry construction of the amenities, plant and offices construction resists earthquake forces by spanning through in-plane flexure to stabilising return walls acting through in plane shear.

Connections of the steel portal frames to the concrete masonry is required structural for the stability of the frame, and for the transfer of longitudinal forces from the roof into the wall

FIGURE 7: View of pool enclosure from north looking east

FIGURE 8: View of pool enclosure from south looking east

4 INVESTIGATIONS

4.1 INFORMATION AVAILABLE

The following information was used in investigating and assessing the building:

- Architectural drawings titled "Changing Room Improvements" prepared by Judd Fenwick Team Architecture dated 13.03.98
- Structural drawings titled "Greendale Swimming Pool Complex Improvements" prepared by LHTDesign dated 17 December 1999.
- LHTDesign report titled "Greendale Pool – Possible Upgrading" dated July 2010
- Condition & Compliance Assessment, prepared by CREATE, dated 16 July 2015
- Initial Seismic Assessment, prepared by Aurecon, dated 22 September 2015

No existing records regarding the construction of the original building are available.

4.2 SITE INVESTIGATIONS

Site investigations carried out were as follows:

- Detailed visual inspection & site measure
- Scanning for reinforcement content within concrete block masonry walls

A thorough visual inspection and site measure of the building was undertaken to determine the geometry & configuration of the structural load resisting system. From these inspections the following was observed:

- No significant cracking of visible concrete foundations or concrete block masonry walls was observed
- Degredation of timber purlins and corrosion of steel frames and connections was observed, particularly extensive at base connections.

Detailed onsite measurements were taken during both site inspections to confirm member sizes and structural arrangement.

Structure Scan & Report New Zealand (SSRNZ) were in employed to conduct an outline and grid scans of a sample of the reinforced concrete block elements in the building. This technology is a non-destructive tool to assist in determining the ferrous content of concrete structures. Reinforcing details used in the desk top analysis were inferred from the results from the scans, together with applied engineering judgement and conservative bar placement assumptions. As non-destructive testing only was carried out, without positively determining bar diameter through destructive investigations, a conservative bar diameter was required to be used as follows:

1. Gable end walls: D12-400 crs vertically
2. Side walls: D12-600 crs vertically

The reinforcing and details of the foundation system is generally unknown. Expensive and invasive investigative techniques would be required to accurately determine these. We did not consider that such investigations were necessary, cost effective, or of benefit to the outcome of this assessment on the basis that:

- The building has been located on this site for over 30 years without evidence of significant settlement or duress of the foundations.
- The compliance level of the building is very low even before consideration of force going through footing.

The connection of the purlin to the main rafter was investigated to determine contribution to the longitudinal lateral load resisting system and stability to the main portal frames through prevention of buckling. The timber purlins are notched between the flanges of the steel rafter and are fixing into location with a 3.15 dia nail through the lower flange into the timber purlin. Whilst nominal tension or vertical capacity of the connections was observed, it was considered that sufficient compressive capacity was available to provide the required support for the resistance and transfer of loads for these two situations.

No soil investigation, assessment or reporting has been undertaken in line with the scope of our engagement, including liquefaction and differential settlement. We did not consider that such investigations were necessary, cost effective, or of benefit to the outcome of this assessment on the basis that the compliance level of the building superstructure is very low even before consideration of soil induced displacements.

The assessment of structural elements has been based on information obtained from the investigations and available construction documentation described above. It has been assumed that the samples reviewed are indicative of the general building structure characteristics.

4.3 MATERIAL CONDITION

As previously reported, elements of the building structural system have degraded through corrosion of steel elements such as the frame, bolt fixing and associated connection plates, and rotting of timber elements, in particular the purlins below the Durolite.

Areas identified are being of concern are as follows:

- Significant degradation of steel portal base
- Degradation of strut to steel portal column at junction with concrete surrounds
- Degradation of steel connections
- Degradation of steel portals throughout span
- Degradation of roof timbers, particularly below the Durolite
- Degradation roof strap bracing

Our initial assessment of earthquake performance has been undertaken on the basis that the full section capacity was available, ignoring the effects of loss of section capacity through degradation. Based on the outcome of this assessment, we did not consider that further investigations were cost effective or would be of benefit to the outcome of this assessment, as the NBS level of compliance for the superstructure is already very low, without further consideration of loss of section capacity.

Such investigations will likely be expensive and invasive and will not positively affect the outcome of the assessment which is governed by the critical structural weakness. We therefore consider in the interests of the building owners that assessment and improvement of the corrosion of the steel frames and decay of the timber purlins is best undertaken in conjunction with a wider improvement strategy for enhancing seismic capacity.

However, it is clear that loss of section capacity has occurred in specific locations, and that the above material testing will likely to result in reduced capacity available and therefore a reduced earthquake performance. Therefore, in recognition of this fact, a reasonable reduction of section capacity has been applied to obtain truer representation of the earthquake capacity values. This reduction is based on visual observations only, and is likely conservative. The section capacity therefore considered to remain available on the basis of the above is between 60% and 80%, depending on observed severity of degradation. As per above. Without maintenance, the available capacity of the structural system, will continue to diminish.

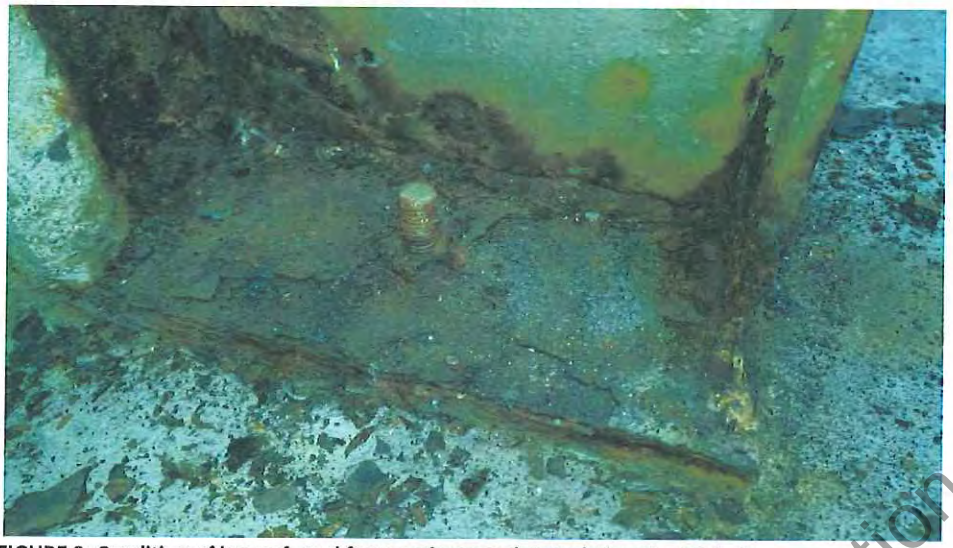


FIGURE 9: Condition of base of steel frame column and corroded nut to HD bolts

FIGURE 10: Condition of primary steel portal eaves connection along north

FIGURE 11: Condition of strut to southern column at junction with concrete floor

5 SEISMIC ANALYSIS

5.1 ASSESSMENT CRITERIA

The following provides current requirements, recommendations and guidance relied upon for the assessment of the buildings structure for earthquake actions.

- The New Zealand New Building Act 2004, Section 122.
- New Zealand Society for Earthquake Engineering (NZSEE) publication titled "Assessment and Improvement of the Structural Performance of Buildings in Earthquakes"
- New Zealand Standards
    - Structural Design Actions – (NZS1170.0, 1170.1 & 1170.5)
    - Steel Structures – (NZS3404)
    - Timber Structures – (NZS3603)
    - Concrete Masonry Structures – (NZS4230)

Significant advances in the understanding and application of earthquake actions, performance of structures for these actions, legislative requirements and perception of risk has occurred since the time that these buildings were first constructed and upon which the standard for new buildings is now based.

5.2 APPROACH

5.2.1 General

The type of soil the building is founded on is assumed to be "deep or soft soil" (Class D) and the design life of the building is assumed to be 50 years.

The Importance Level of the building determines the Risk Factor used in analysis. This varies from buildings presenting a low degree of hazard to life such as farm sheds (Importance Level 1) through to buildings with special post disaster functions such as Hospitals (Importance Level 4).

Allowing for occupancy densities as prescribed in the acceptable solution to the New Zealand Building Code for Fire Safety, occupancy is considered to be less than 300, therefore the building is considered to be an Importance Level 2 (normal).

5.2.2 Seismic Loadings

The seismic acceleration coefficient, C_d, is determined from various parameters set out in NZS1170.5. From this coefficient the horizontal seismic inertial loads acting on the building are determined and following qualitative analysis including computer modelling the various member capacities are assessed against the expected demand resulting from the earthquake design actions.

The parameters used for C_d relate to the importance of the building, the type of soil the building is founded on, the design life of the building, the translational period of the building, and the ductility of the building and the location of the building in relation to known fault lines.

Ductility is the ability of a structure to undergo inelastic displacement and dissipate energy without failure. Inelastic displacement is where the structure deforms to the extent that it will not return to its original position when the load is released, similar to how a metal paper clip behaves when bent.

It is our understanding that the Ministry of Education allows a ductility of 2.0 for stand-alone portal frames, therefore this was the starting point in our assessment of available ductility capacity. The frames are tied to the concrete block walls which prevents the displacement required to develop a ductile response. These wall also lack capacity is develop a ductile response. Further, the material condition of the portal frame within the potential plastic hinge zone is poor. We therefore consider that the use of an available ductility of 1.25 in our assessment is appropriate. The fundamental period that the buildings oscillate at is generally less than 0.4 seconds.

5.2.3 Material Properties

The characteristic strengths of materials have been taken as per NZSEE publication, generally as follows:

- Radiata Pine characteristic values are that of 'No 1 Framing' grade as per NZS3603
- Yield strength of steel structure 250MPa
- Yield strength of reinforcement 250MPa
- Compressive strength of concrete block masonry of 8MPa

5.2.4 Assumptions

The analysis has been carried out based on the following assumption:

- Strength reduction factor of unity ($\phi = 1.0$)
- Investigative samples are indicative of the general building structure characteristics.
- Construction works has been effected in a in accordance with good building practice.
- Liquefaction effects have been excluded from this assessment, and the occurrence thereof has been assumed to not affect life safety.
- Lower bound reinforcement from scanning results has been used in analysis for capacity checks of the concrete block masonry elements
- Purlin connections to the rafters of the steel portal frame are capable of providing the necessary stability to prevent flexural buckling mechanisms
- Purlin connections to the rafters of the steel portal frame are capable of transferring the necessary forces required for the roof plane tension bracing.
- Full section capacity of all sections is available without consideration of material loss through degradation.

5.3 ANALYSIS

Our assessment of this building follows the guidelines provided in the New Zealand Society for Earthquake Engineering (NZSEE) publication titled "Assessment and Improvement of the Structural Performance of Buildings in Earthquakes", as noted above.

The distribution of forces throughout the building is in accordance with Equivalent Static Methodology.

3D modelling of the building structural system has been undertaken to determine member demands.

Due to the assessed low availability of ductility, bi-directional loading in accordance with NZS1170.5 has been undertaken, with 100% of the seismic force applied in the direction of consideration and 30% of the seismic force applied in the orthogonal direction.

Capacity design for the tension only roof plane Concentric Bracing have been undertaken in accordance with the material code requirements of NZS3404.

6 ANALYSIS RESULTS

6.1 SUMMARY

We have determined by analysis that the available seismic performance of the building structure is less than **20%NBS.** This is classified as "**E Grade**", and is under the Building Act threshold of 33%NBS. Therefore, the building is considered to be "**Earthquake Prone**".

Tables 1 below summarises the seismic performance of the main lateral load resisting systems. It is noted that unless otherwise stated, the worst case of any element for any direction governs the overall seismic grade assigned. Whilst accurate figures have been determined, due to variability's in assessment and assumptions made in the analysis, these have been rounded when tabulated.

Element	Assessment Result (%NBS)		Seismic Grade
	Full Section Capacity	Allowance for Potential Loss of Capacity	
Concrete Block Masonry: East Wall (out of plane)	40%	N/A	C
Concrete Block Masonry: North & South Walls (out of plane)	70%	N/A	B
Concrete Block Masonry: All other locations and actions	100%	N/A	A
Roof plane – south (cement fibre diaphragm)	100%	N/A	A
Roof plane – north (tension braced CBF)	50%	40% 80% available section capacity assumed due to connectivity and degradation	C
Portal Frame (excluding strut)	70%	40% 60% available section capacity assumed. Critical moment coincides with area of high corrosion	B
Portal Frame Strut	100%	60% 60% available section capacity assumed due to connectivity and degradation	C
Connections: Portal frame to foundation	25%	<20% Severe degradation of bolts, nuts and base plate results in nominal available capacity	E
Connections: Portal frame to wall	20%	<20% 60% available section capacity assumed due to connectivity and degradation	E
Foundations: Portal Frame Strut	50%	N/A	C

TABLE 1: Summary of Building Element Seismic Performance

Note that the reported performance above reflects the following specific considerations:

1. Values reported in column 2 have been based on the assumed availability of full section capacity without consideration of material loss through degradation. Material testing will likely result in reduced capacity and therefore lower available earthquake performance. Without maintenance, the available capacity will continue to diminish.
2. Due to the outcome of our assessment based on full member capacity, we did not consider detailed investigations were of benefit at this time. The rationale for this was that the compliance level of the building superstructure was very low even before consideration of loss of section capacity, and such investigations would incur significant cost for the owner. However, it is clear that loss of section capacity has occurred, therefore in recognition of this fact a reasonable reduction of section capacity has been applied to obtain the reported values in column 3. As per comments made in item 1 above, material testing will likely result in reduced capacity and therefore lower available earthquake performance. Without maintenance, the available capacity will continue to diminish.
3. The capacity of the concrete block masonry walls has been determined through conservative reinforcement assumptions. Positive verification through destructive investigations may potentially result in an improvement to the above reported capacities for this element.
4. The capacity of the roof plane tension only CBF is dependent on the transfer of compressive forces through the connections between the frames and the purlins.
5. The capacity of the steel portal frame is dependent on the purlins providing stability through prevention of buckling, as mentioned previously.

6.2 LIMITING FEATURES

The primary feature limiting the earthquake performance of the building is connections of the portal frame to the walls & foundations, as per table 1 above.

Other key limiting features of the building are generally as follows:

- Material loss through degradation of primary structural elements including the timber purlins and the steel portal frames and fixings
- Discontinuity of the roof plane diaphragm to the south, resulting in additional stress to the portal frame at this location.

7 SUMMARY

As the building is classified as "Earthquake Prone" (ie less than 33%NBS), the Building Act 2004 applies and remedial works become a legal requirement.

The assessed seismic capacity of the building represents elevated risk to the occupants over what would be minimum acceptable levels.

To improve the seismic performance of the building to achieve at least 33% NBS, the remediation of the portal frame connections to foundations and concrete block masonry elements would need to be undertaken. Refer Section 8 for Temporary Remedial Measures.

To improve the seismic performance of the building to achieve at least 67% in line with NZSEE recommendations and MoE objectives, we advise that development of a remedial strategy should consider the following:

- Improve portal frame connection capacity to concrete masonry elements and foundation system
- Undertake destructive investigations of the concrete block masonry walls to positively verify the reinforcement content and therefore available capacity.
- Assessment and improvement of the corrosion of the steel frames and decay of the timber purlins should be undertaken in conjunction with a wider seismic capacity improvement strategy.
- Improve connections of purlins to frames.
- Improve foundation to southern portal frame columns.
- Improve connection of the strut connection to the southern portal frame column.
- Replace existing hybrid roof plane bracing system with balanced system, to provide for complete and symmetrical load paths, reducing torsional effects, eccentric connections, and increase in stress of the existing portal frame.
- Undertake geotechnical assessment of site to verify and validate long term benefit of improvement investment.

Consideration of remedial works is at this time beyond the scope of our current engagement.

8 SHORT TERM REMEDIAL STRENGTHENING MEASURES

As the building is classified as "Earthquake Prone" (ie less than 33%NBS), we have been asked by the School and MOE to extend our scope to a included provision of a short term remediating solution, to ensure the building can achieve >33NBS and therefore be reclassified as "Earthquake Risk".

The remedial solution provided over page in figure 12 & 13 illustrate only a short term solution, to help safe guard risk and ensure the building has a 35% NBS rating. Given that the corrosion of the steelwork will continue to erode the available seismic capacity of the primary elements, the solution is provided on the clear understanding that a subsequent review is undertaken to remediate the building over the next few months. Hence the temporary strengthening solution provided can only be deemed to be valid for 6-8 months for the date of this report.

FIGURE 12 Section through Pool Enclosure on typical Primary Frames showing Remedial Work locations

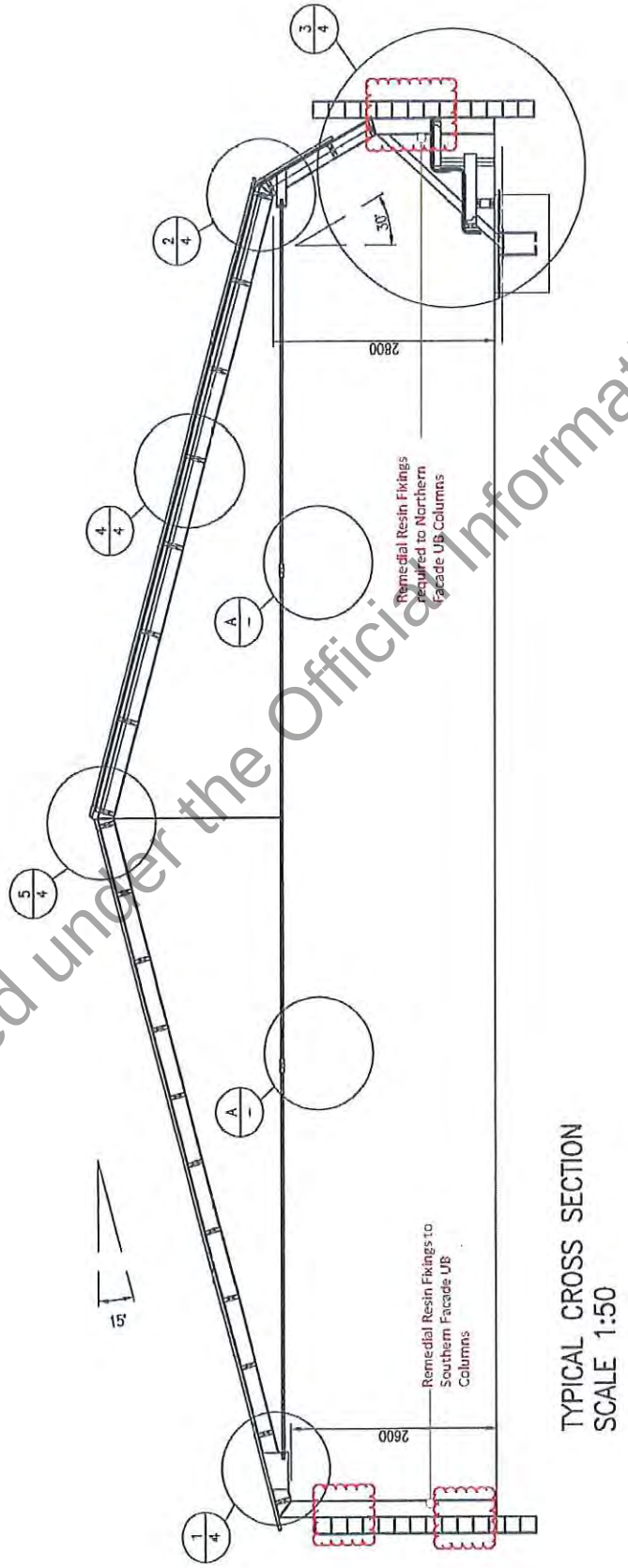
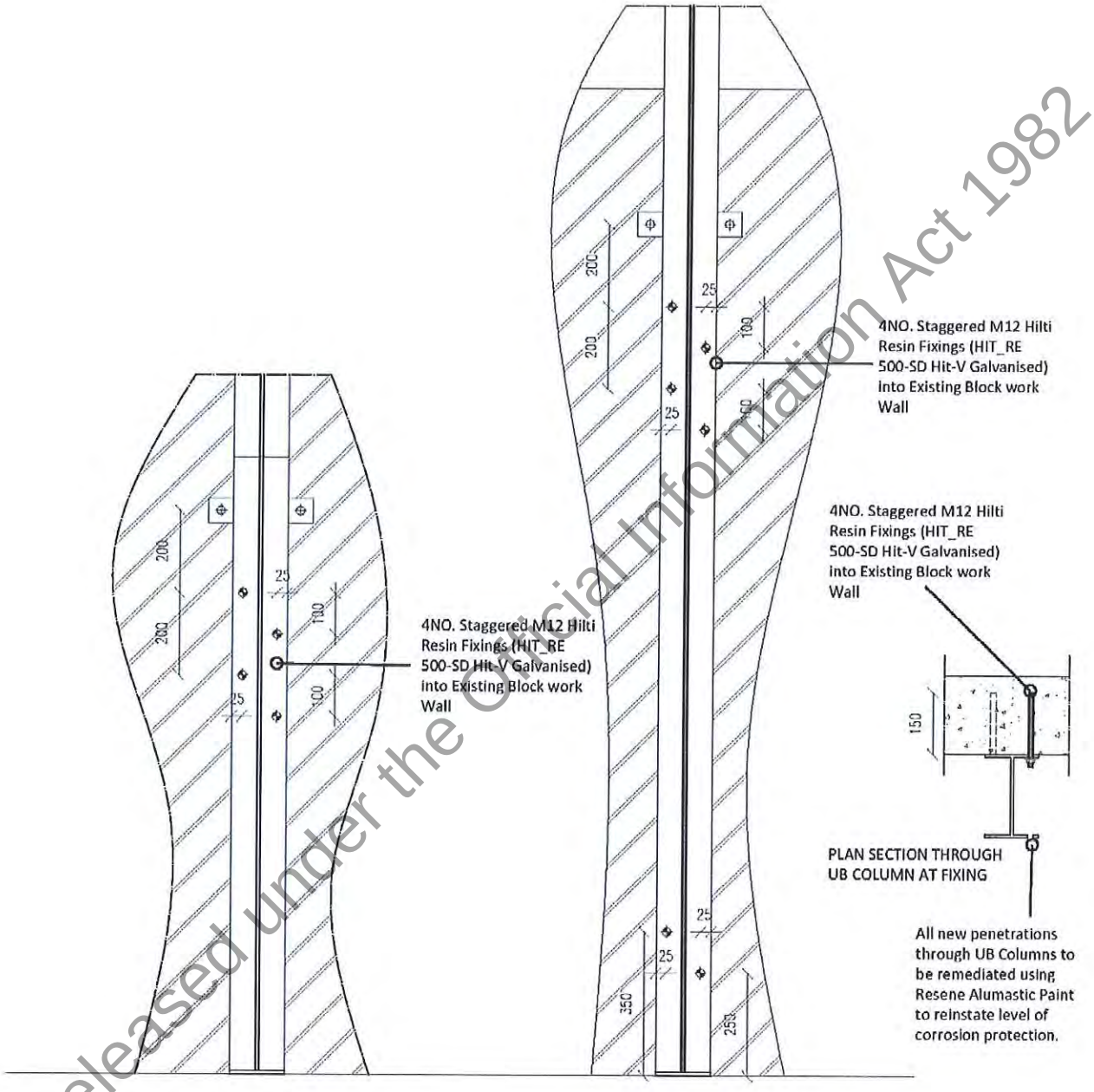
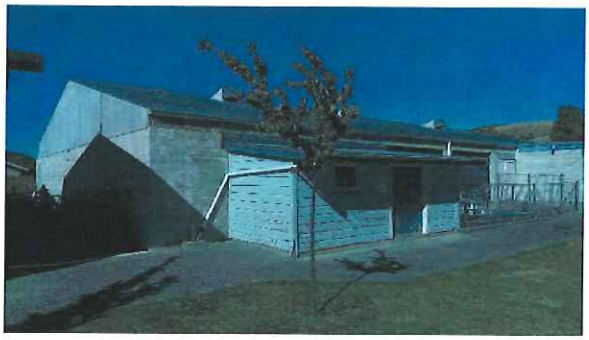


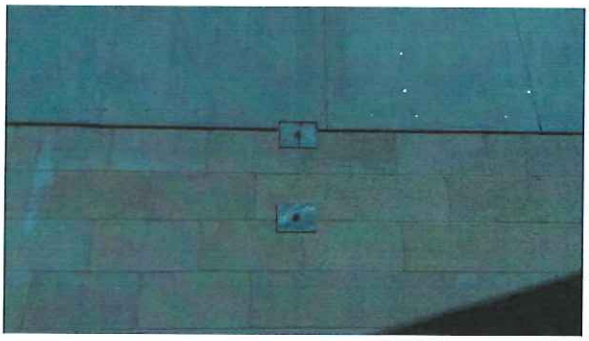
FIGURE 13 Temporary Remediating solution to All Main Primary Steel columns of the Pool Enclosure

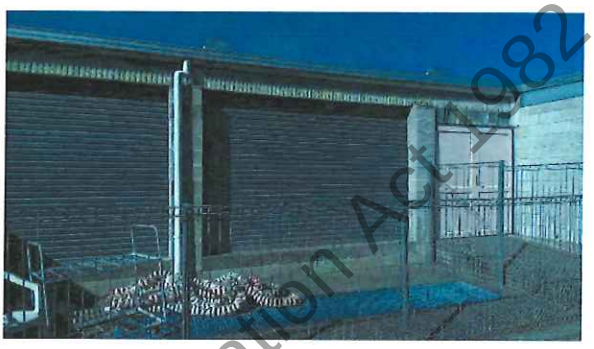


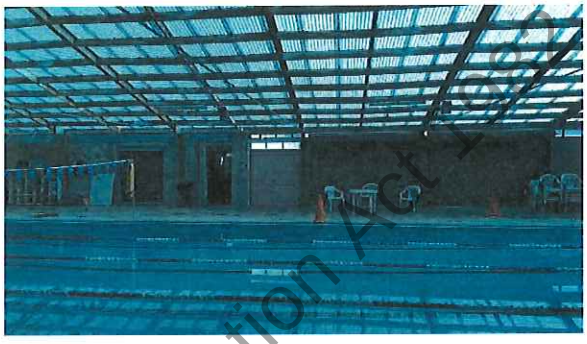
9 APPENDICES

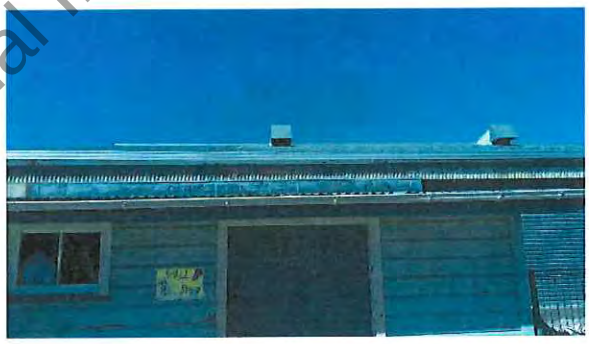
APPENDIX 1: PHOTOS











APPENDIX 2: SCANNING REPORT

S.S.R.N.Z

STRUCTURE SCAN AND REPORT NZ LTD

Report For:

Greendale Pool

Taradale

E. info@ssrnz.co.nz
T. (06) 8358315
P.O Box 5143 Greenmeadows, Napier
M. 0274 172 604

S.S.R.N.Z

STRUCTURE SCAN AND REPORT NZ LTD

Disclaimer

Diameters of reinforcing bars given in this report are an estimate only. It is important to note that the rod diameter values are averages over the scanned area.

SSRNZ and Precast HB Ltd take all practical measures to be as accurate as possible, however do not guarantee the diameter to be 100% accurate.

In using this report the recipient is deemed to understand and accept this disclaimer.

E. info@ssrnz.co.nz
T. (06) 8358315
P.O Box 5143 Greenmeadows, Napier
M. 0274 172 604

S.S.R.N.Z

STRUCTURE SCAN AND REPORT NZ LTD

24/02/2016

Greendale Pool, Taradale

Notes:

Gabel End Block Wall:

Solid filled block.

Verts @ 400mm centers ave.

Horz @ 600mm centers ave.

Side Wall (South):

Solid filled block.

Verts @ 600mm centers ave.

Horz @ 600mm centers ave.

Side Wall (North):

Solid filled block.

Verts @ 600mm centers ave.

Horz @ 600mm centers ave.

E. info@ssrnz.co.nz
P.O Box 5143 Greenmeadows, Napier
T. (06) 8358315
M. 0274 172 604

S.S.R.N.Z

STRUCTURE SCAN AND REPORT NZ LTD

Portal Foundation Pads:

Scanned next to the portal legs for foundation pads, but none were found.

Portal Supports (Southern side):

The foundation pads for the supports from the portal legs to the floor, on the southern side of the pool, appear to be approx. 200mm thick/deep.

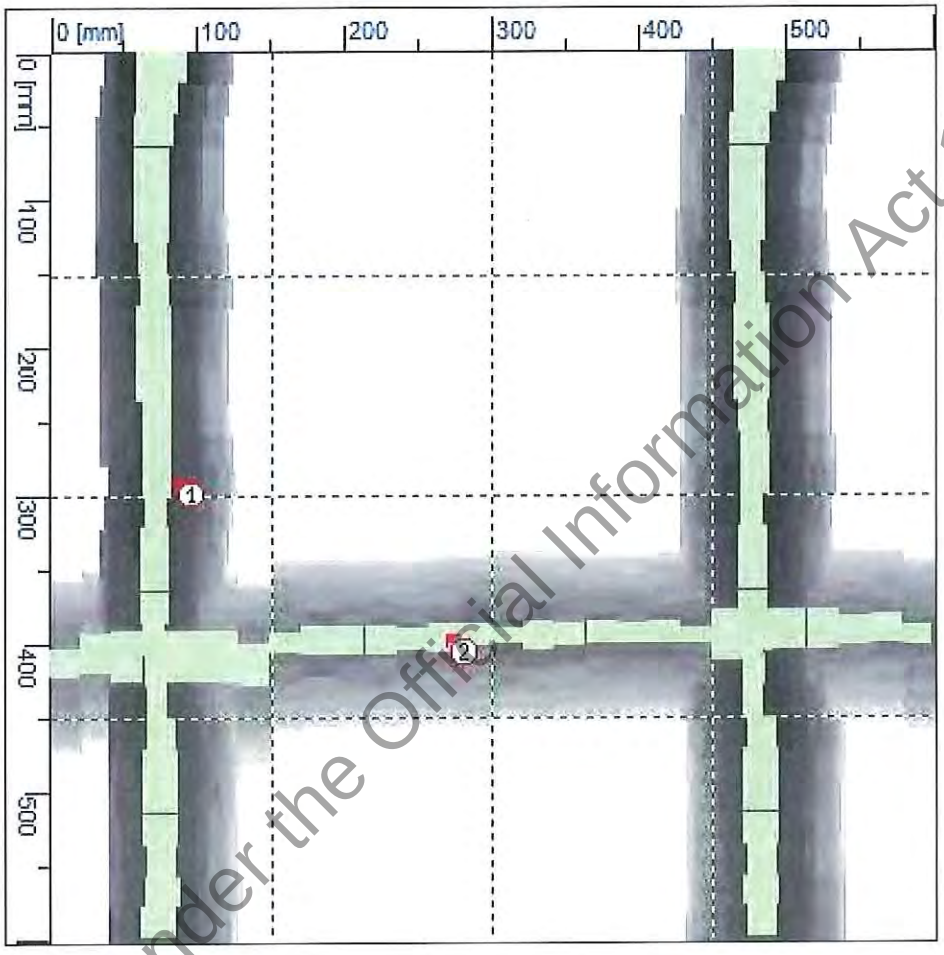
Floor:

There are bars in the floor that line up with the verticals in the walls, I was unable to determine if these floor bars are connected to the wall.

E. info@ssrnz.co.nz
P.O Box 5143 Greenmeadows, Napier
T. (06) 8358315
M. 0274 172 604

Imagescan: *FS001409.XFF*

Date / Time: 2016-02-24 09:53:00 SSN: 31311010 [mm]



Customer: ---

Location: Greendale Pool, Taradale Operator: SSRNZ

Comment:

Gabel End Wall.

Scanned from the inside.

Unverified diameters could be due to the depth of the reinforcing, or some other interference.

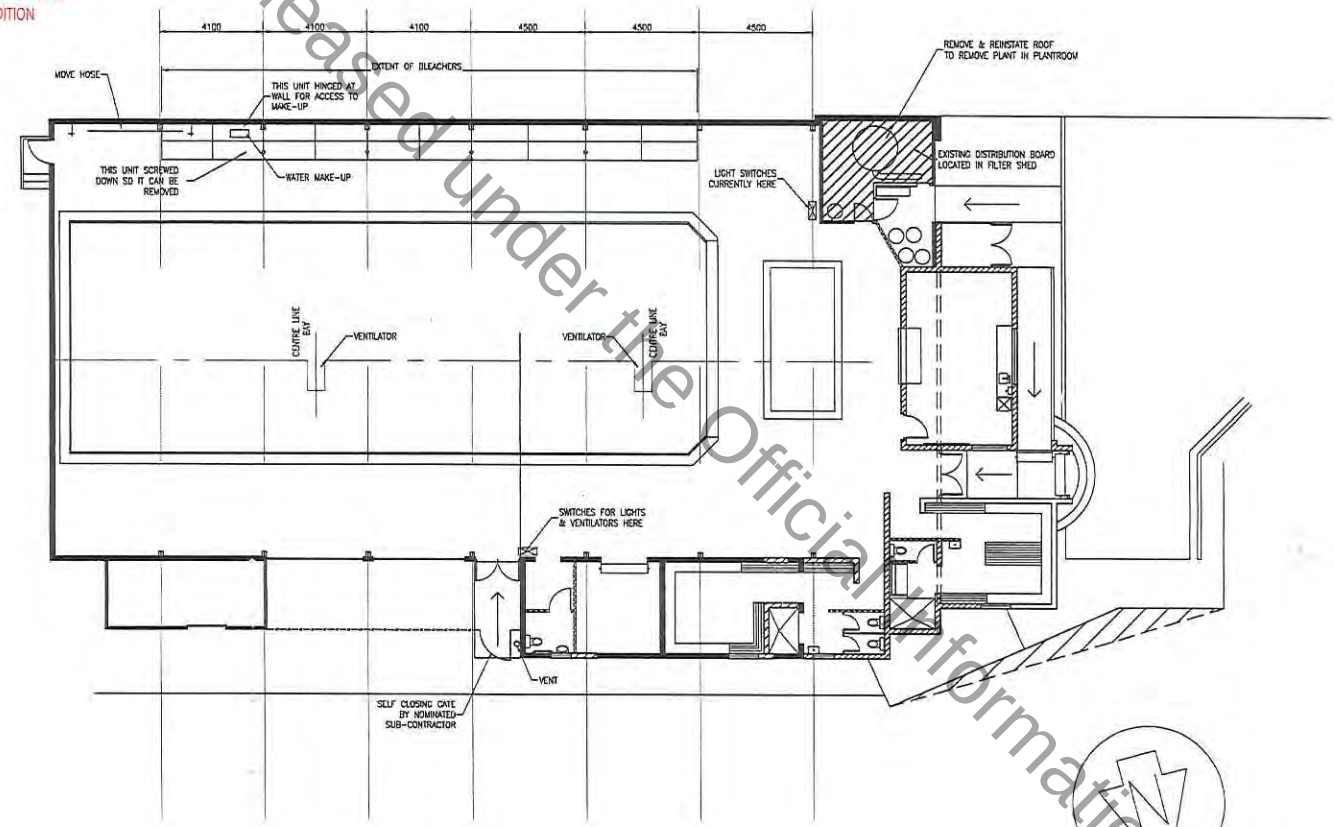
6440mm from the LHS of the grid to the Northern side wall.
1325mm from the floor to the bottom of the grid.

Marker	x: [mm]	y: [mm]	Comment:
1	84	288	16mm Verts @ 400mm centers ave (dia NOT verified
2	268	395	12mm Horz @ 600mm centers ave (dia NOT verified)

Project: Greendale Pool, Taradale

APPENDIX 3: NCC DRAWINGS

PLEASE NOTE
THIS CONSENT IS SUBJECT
TO A CONDITION



FLOOR PLAN
SCALE 1:100

PLANNING CHECK
Date Completed 8/4/00
Planner

(9.)

TARADALE School &
GREENDALE SWIM CLUB INCORPORATED
GREENDALE SWIMMING POOL COMPLEX IMPROVEMENTS

FLOOR PLAN

JUDD FENWICK
TEAM ARCHITECTURE

Rev	Amendment	Chkd	Date

LHT LOUGHNAN HALL & THOMPSON
PROJECT CONSULTANTS

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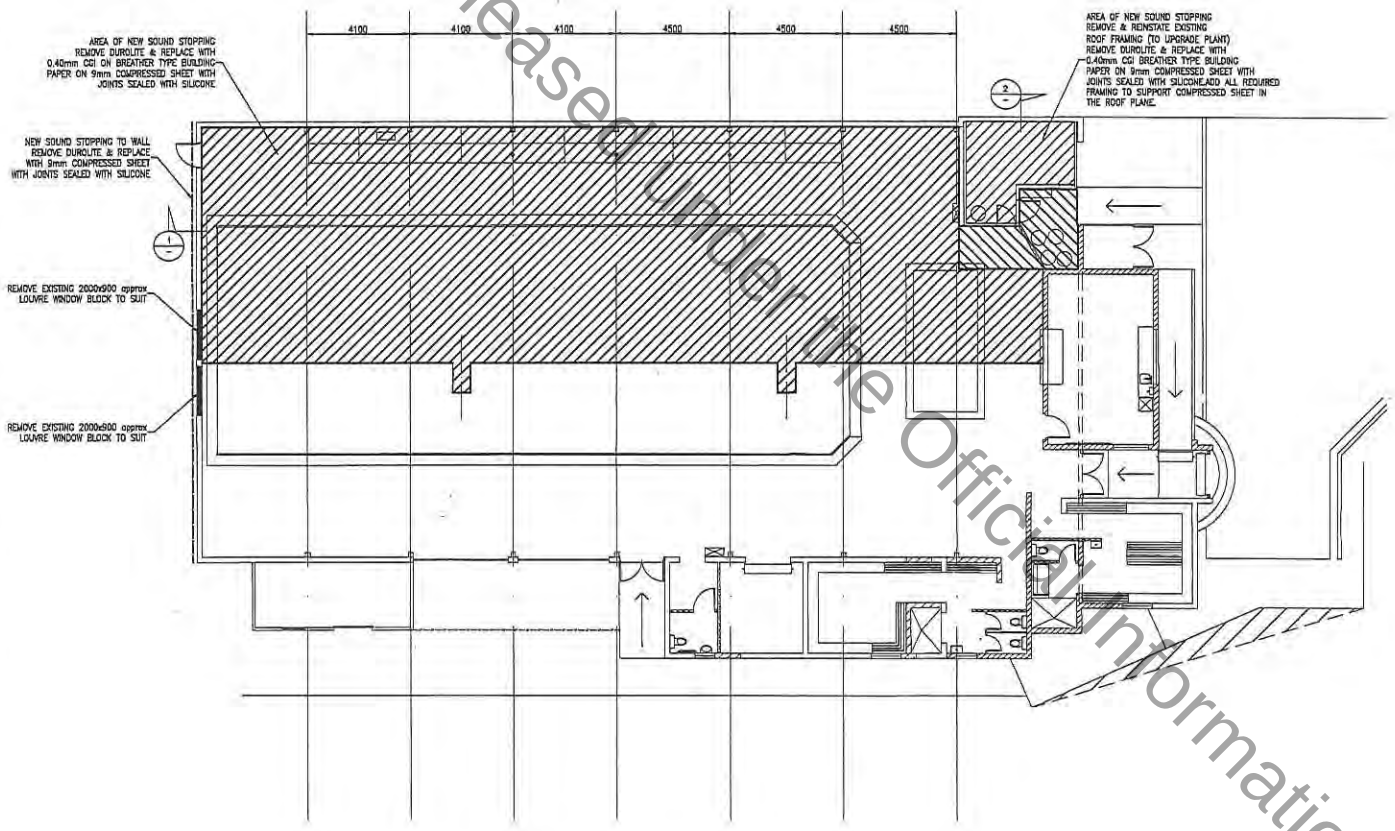
Gisborne
Quay Pl Bldg
Quay Pl
Tel 06 867 8452

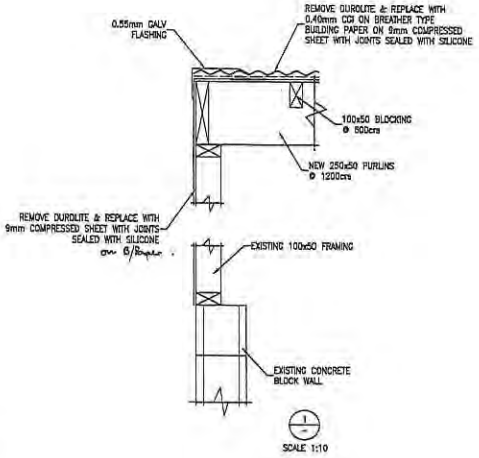
DES	DRN	CHKD	QA	DATE	SHT
MFE	GD			17/12/99	1 of 5

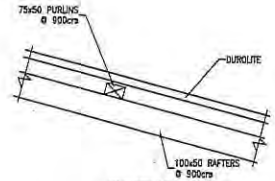
CAD PROGRAM	SIZE	TEMPLATE	JOB	SHEET	REV
LT2000	A1	PP23_01	JOB1	7769	0

Scale 1:100 @ 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

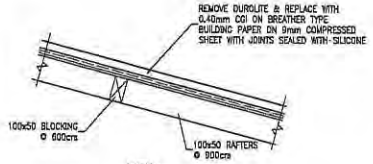


ROOF CLADDING PLAN
SCALE 1:100





EXISTING



NEW

2
SCALE 1:10

NOTE:
ALL TIMBER TO BE H3
ALL NAILS TO BE HOT DIP GALVANISED

GREENDALE SWIM CLUB INCORPORATED
GREENDALE SWIMMING POOL COMPLEX IMPROVEMENTS

ROOF CLADDING PLAN

JUDD FENWICK
TEAM ARCHITECTURE

Rev	Amendment	Chkd	Date

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Quay Pt
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DES	DRG	CHKD		DATE	SHT
MFE	CD			17/12/99	2 of 5
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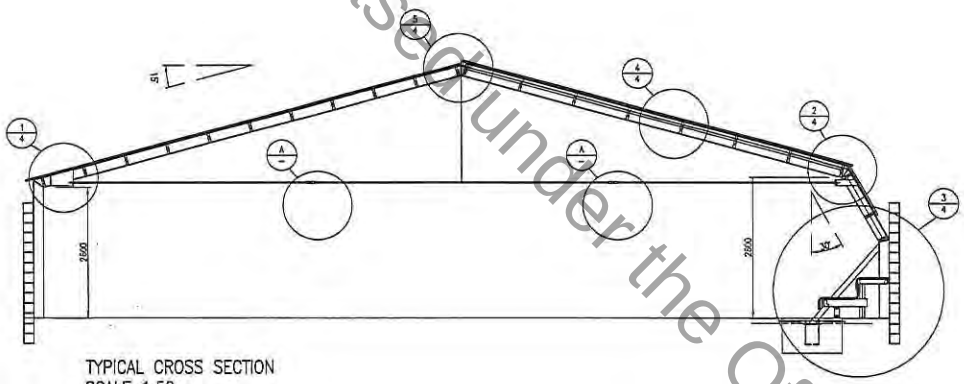
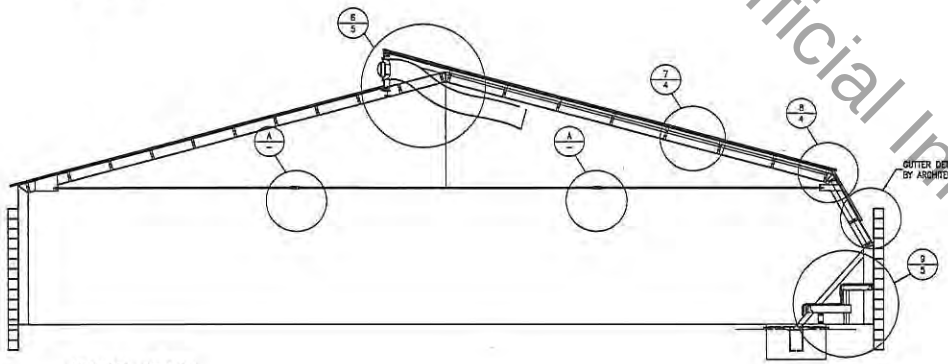
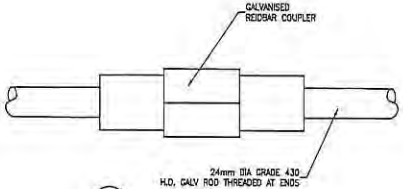


TYPICAL CROSS SECTION
SCALE 1:50



SECTION AT FAN
SCALE 1:50



GREENDALE SWIM CLUB INCORPORATED
GREENDALE SWIMMING POOL COMPLEX IMPROVEMENTS

CROSS SECTIONS

JUDD FENWICK
TEAM ARCHITECTURE

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Quay Pl
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DES	DRG	CHKD	QA	DATE	SHT
MFE	CD			17/12/99	3 of 5

CAD PROGRAM	CAL	FILENAME	JOB	REF	REV
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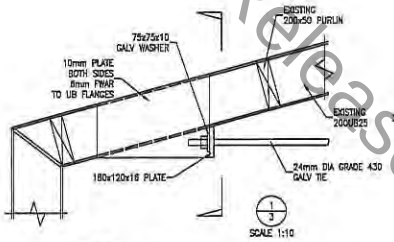
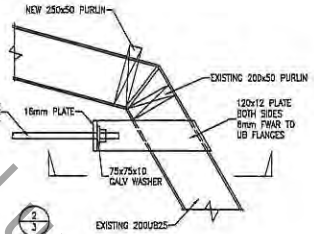
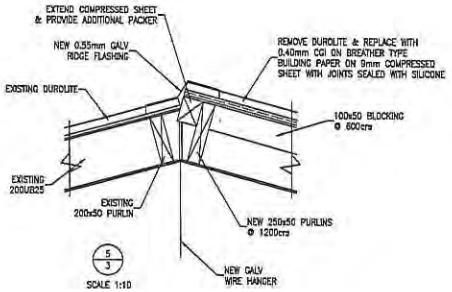
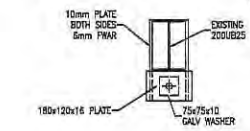
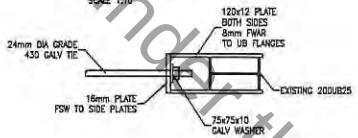
Scale 1:50 @ 1000mm

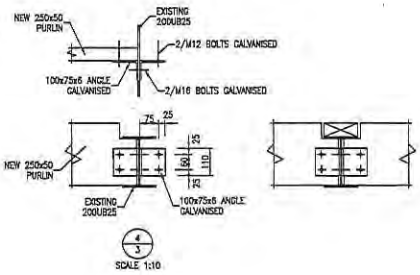


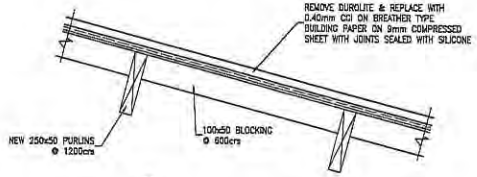


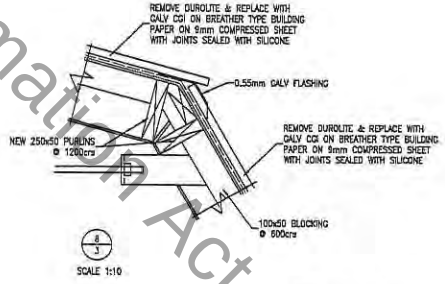












NOTE:
ALL TIMBER TO BE H3
ALL NAILS TO BE HOT DIP GALVANISED

GREENDALE SWIM CLUB INCORPORATED
GREENDALE SWIMMING POOL COMPLEX IMPROVEMENTS

DETAILS

JUDD FENWICK
TEAM ARCHITECTURE

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DES	DRG	CHKD	QA	DATE	SHT
MFE	GD			17/12/99	4 of 5

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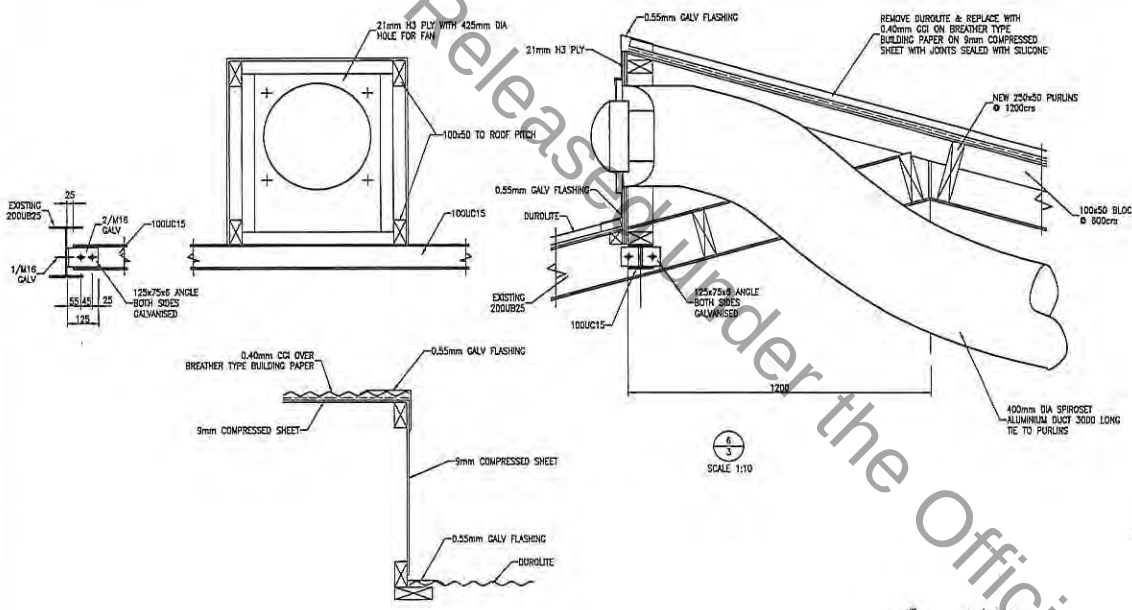
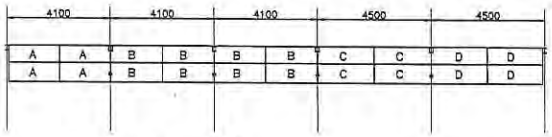
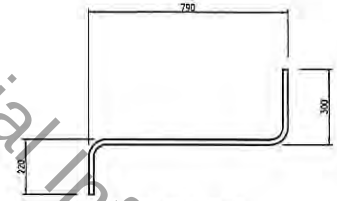




BLEACHER LAYOUT
SCALE 1:100

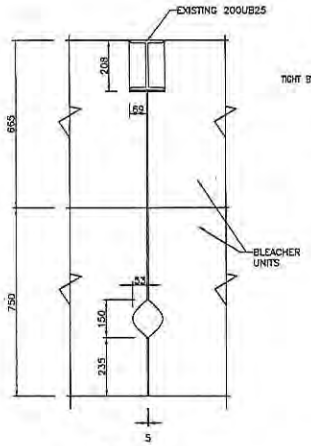
UNITS A = 2014 LONG
UNITS B = 2048 LONG
UNITS C = 2248 LONG
UNITS D = 2214 LONG

NOTE:
ALL TIMBER TO BE H3
ALL NAILS TO BE HOT DIP GALVANISED

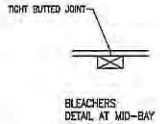


GRC SEAT UNIT (ex 20mm)
SCALE 1:10

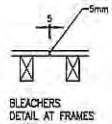
NOTE:
SCREW GRC UNITS TO FRAMING
CUT AROUND UB LEG & STRUT.



BLEACHERS
DETAIL AT FRAMES
SCALE 1:10

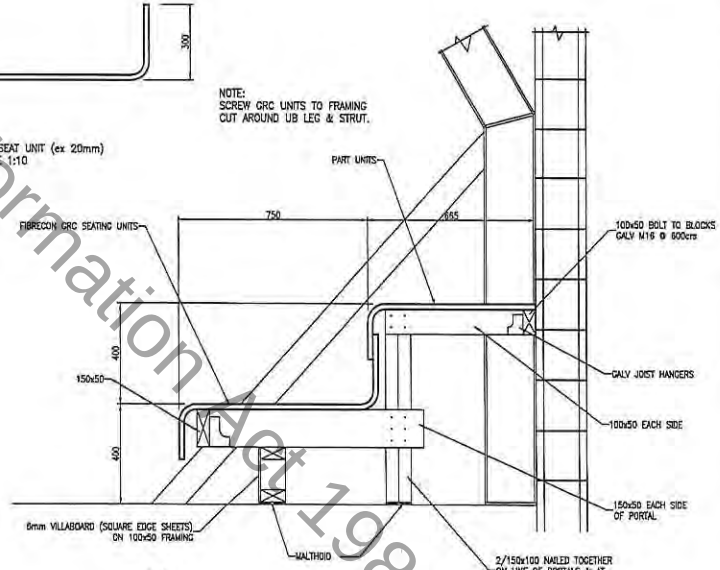


BLEACHERS
DETAIL AT MID-BAY
SCALE 1:10



BLEACHERS
DETAIL AT FRAMES
SCALE 1:10

END OF BLEACHERS
SCALE 1:10



9/3 SCALE 1:10

NOTE:
ALL TIMBER H3 TREATED
ALL NAILS HOT DIP GALV 3.15mm DIA

GREENDALE SWIM CLUB INCORPORATED
GREENDALE SWIMMING POOL COMPLEX IMPROVEMENTS

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Casey Pl
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DES	DRG	CHKD		DATE	SHT
MFE	GD			17/12/99	5 of 5
CAD PROGRAM		SIZE	FILENAME	JOB	REV
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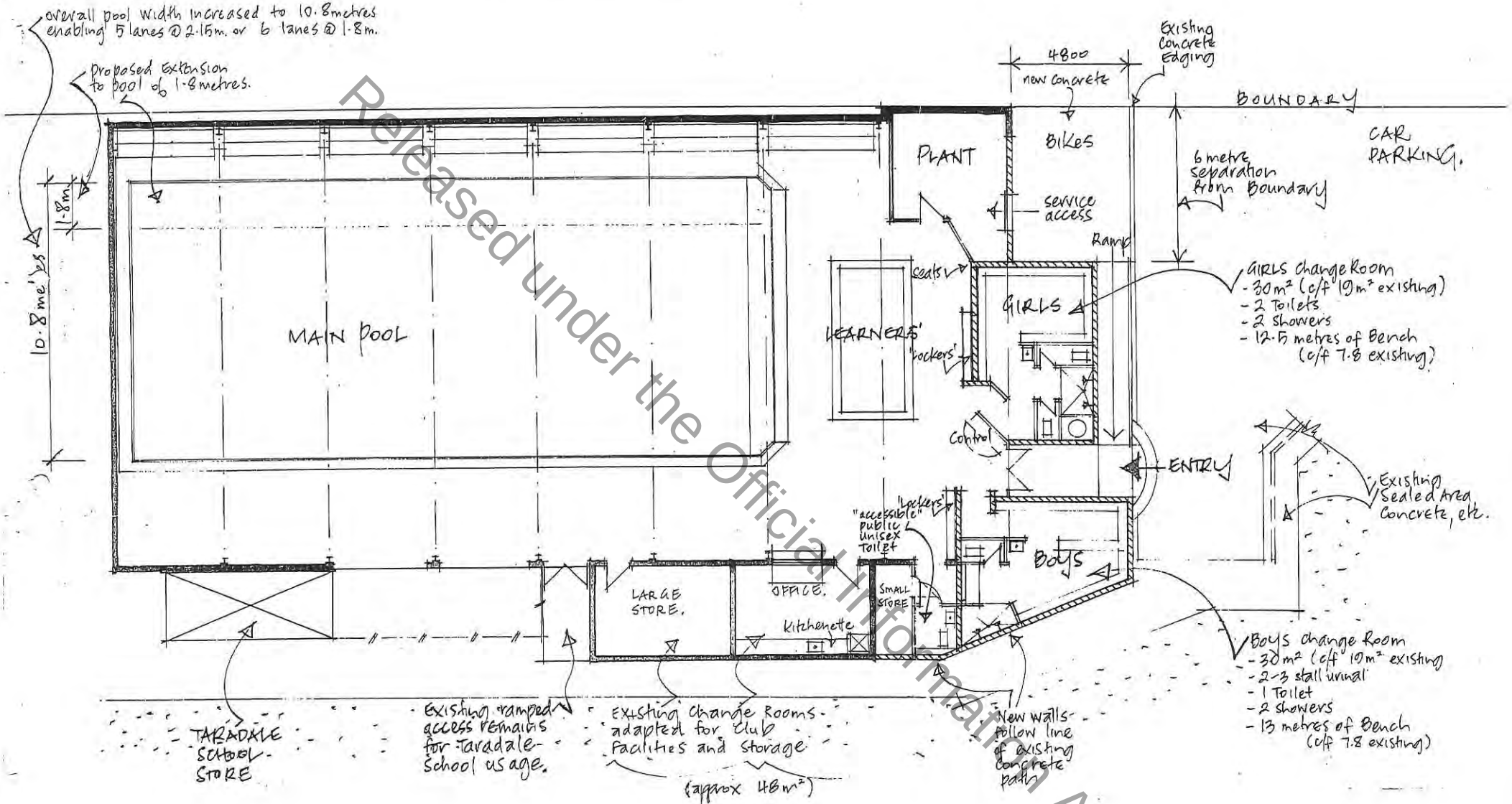
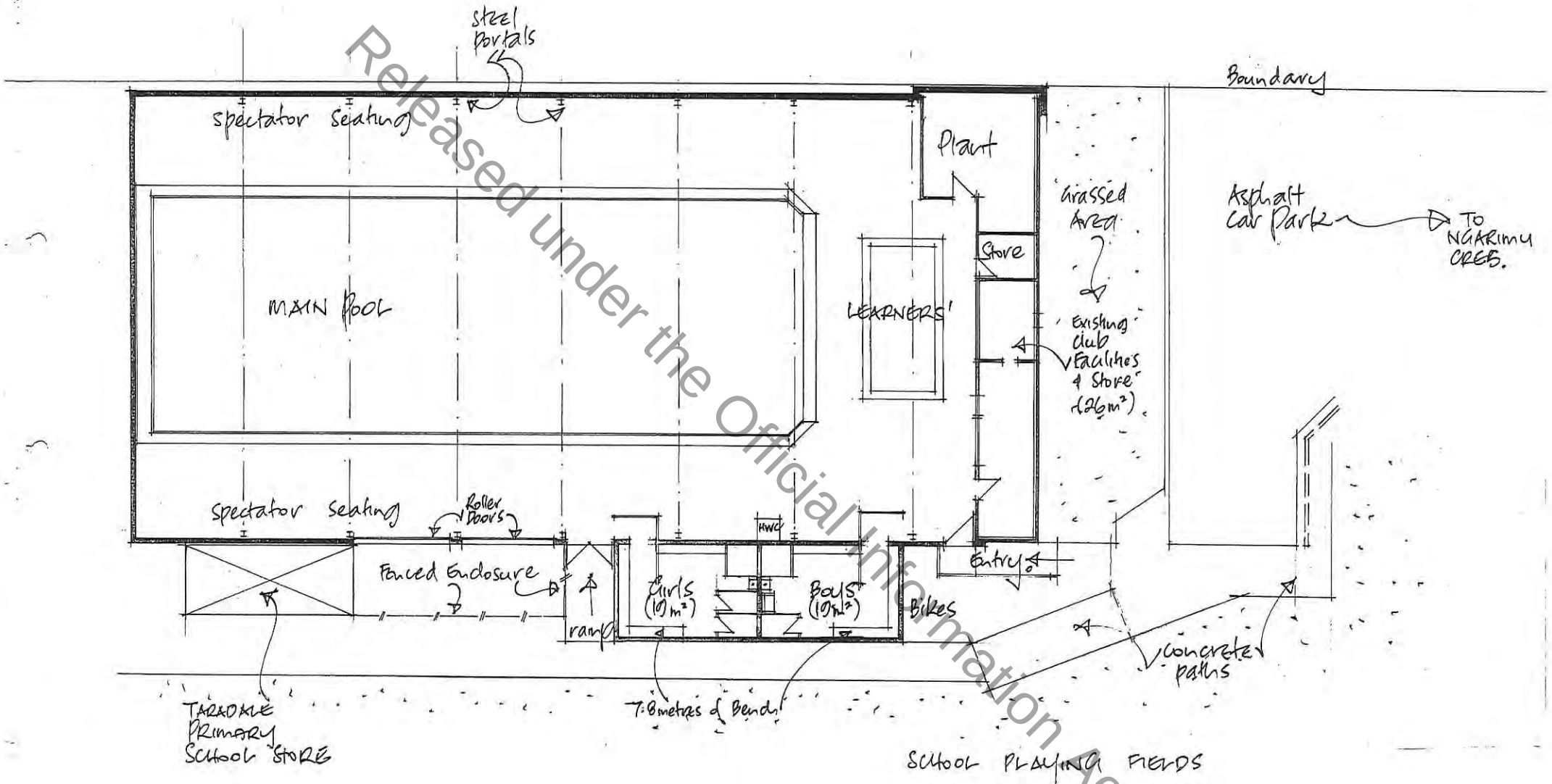
Scale 1:100 @ full size
Scale 1:10 @ full size



GREENDALE SWIM CLUB - Revised Proposal No. 5 - January 1998 - 1:100 - JUDD FENWICK NATUSCH ARCHITECTS

9754-P.6



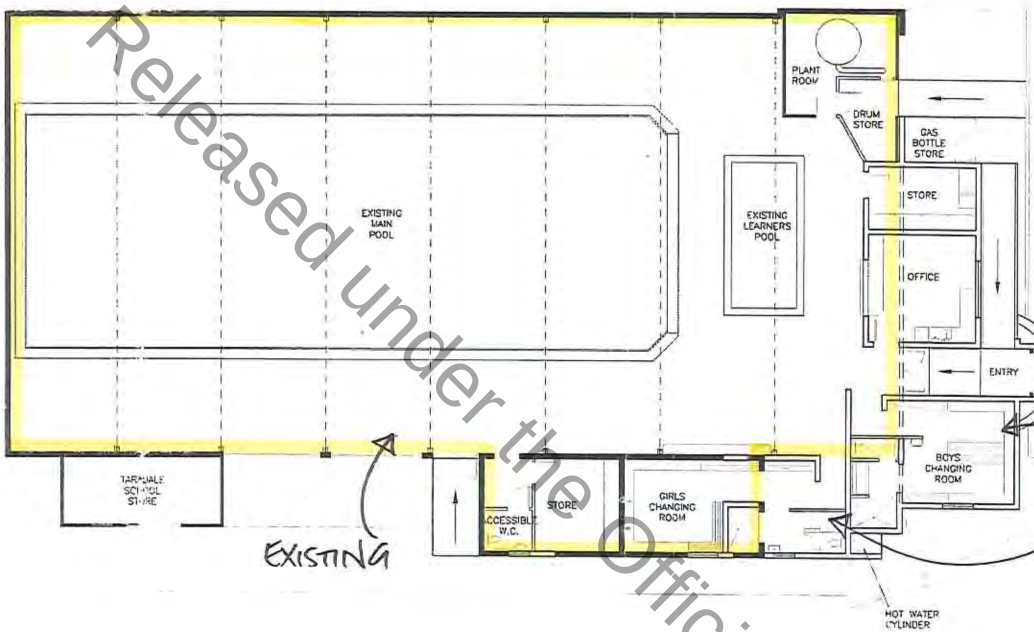
GREENDALE SWIM CLUB – Facilities as Existing – September 1997 – 1:100 – JUDD FENWICK NATUSCH ARCHITECTS

9754 - P. Ex.

NOTES.

TARADALE SCHOOL SWIMMING POOL
General Layout New Plan

Scale 1:100



GENERALLY:

Contractor / Sub Contractor shall familiarise themselves with all drawings of this set.

All work shall comply with the N.Z. Building Code, N.Z.S. 3604, N.Z.S. 4229, and all other relevant Regulations and Standards.

During the tendering period, Contractors or Sub Contractors shall have thoroughly [illegible] themselves of the premises. Allow for all work necessary to properly upgrade and complete, and to leave the whole facility operable, clean and ready for use.

Working area shall be confined to the site [illegible]

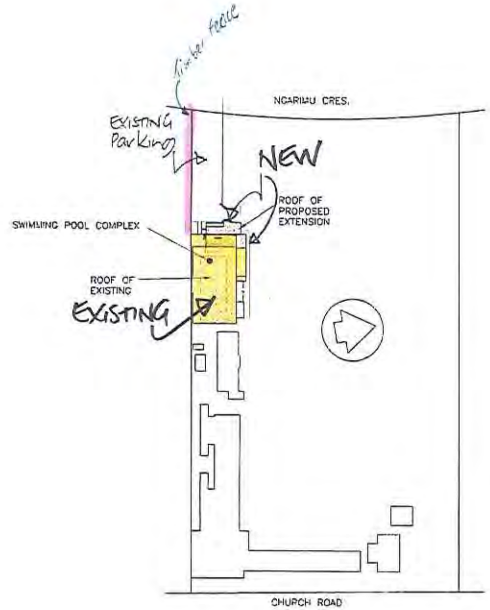
All work of all trades shall be best practice and best materials.

Allow to make good all existing surfaces [illegible]

[illegible] remove all labels. Remove all debris, etc.

SITE LOCATION PLAN
Taradale Primary School

Scale 1:1000



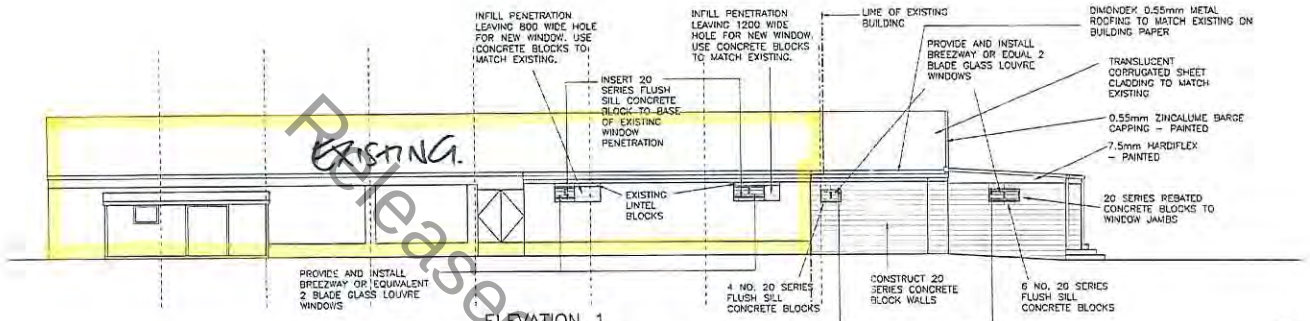
Judd Fenwick Natusch
ARCHITECTS
Desco Centre, 163 Tennyson St
P.O. Box 885, Napier
Ph. (06)835 7561 Fax. (06)835 4925

MINISTRY OF EDUCATION

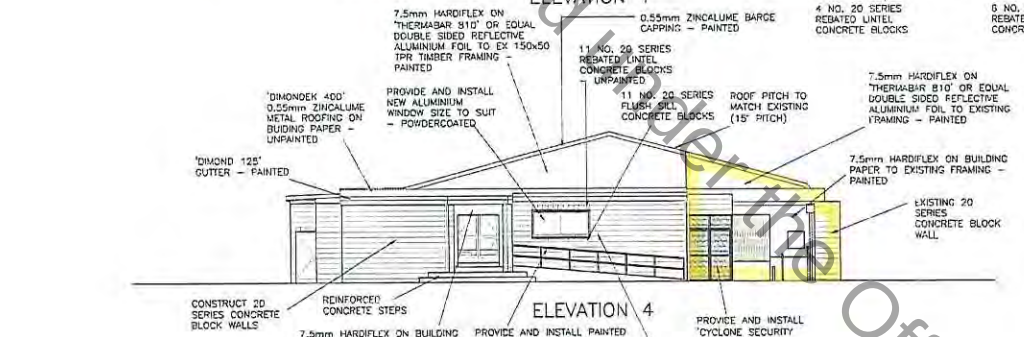
TARADALE SCHOOL POOL CHANGING ROOM IMPROVEMENTS

SITE LOCATION AND GENERAL PLAN

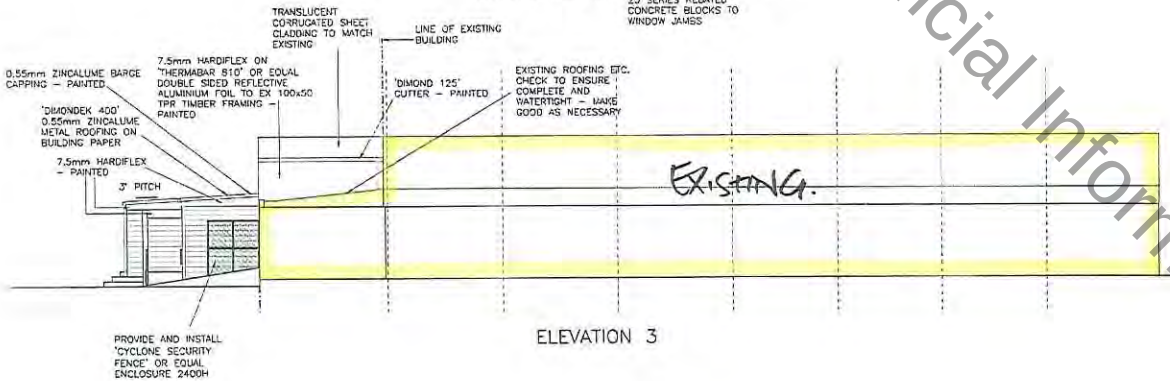
Scale:	Date:	Drawn:
A/S	26/3/98	PTL
Job: 9754	No: GATSP01	Rev:



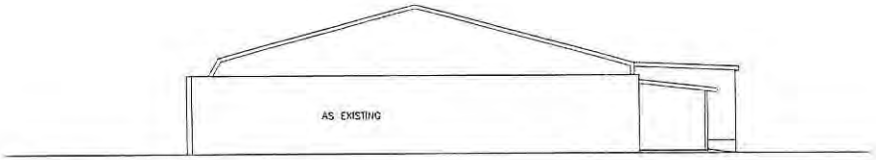
ELEVATION 1



ELEVATION 4



ELEVATION 3



ELEVATION 2

NOTES:

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Contractor to verify dimensions prior to commencement of work.

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Submit shop drawings of all assemblies for review before manufacture.

FINISHES GENERALLY:

Trim – generally new scotia/ skirtings/ door frames and other required trim shall be painted to colour specified by client.

Allow to paint/ repaint all Hardiflex surfaces, all new timber surfaces including all new weatherboards, all timber doors, all door jambs,all new and reused timber in changing rooms, all timber architraves, skirting, and trim, but excluding exposed structural timber. Doors to be painted both sides.

Paint Finish – All new work shall have one primer/sealer undercoat and minimum of two top coats. All existing work made good shall be sanded, primer/undercoat where necessary, and have two top coats, to leave any made good surfaces in 'as new' condition. Finishing shall be brush or spray application for smooth, even, high level of finish especially to doors. All holes etc. to be stopped & filled. Careful sanding between all coats. Brush marks/ streaks NOT ACCEPTABLE. Painter shall use premium line paints only!

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Showers – paint walls inside showers using one coat of Dulux Supercoat followed by two coats Dulux Super Enamel. Paint floors using Dulux Durapave Truegrip with non-slip finish. All concrete surfaces to be prepared and painted by painting contractor in accordance with paint manufacturers instructions.

CARPENTRY GENERALLY:

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Obtain and install all structural steelwork and other metalwork as noted and/or as necessary to complete the work.

Provide scotia/ skirting/ architraves to match existing.

All timber framing to be kiln dried to #1 or equal treatment.

MASONRY:

All masonry construction shall comply with NZS 4210. Masonry units shall be 200 series blocks complying with AS/NZS 4455. All cells to be filled with grout. Cleanout all loose mortar and debris from block cavities prior to grouting.

Architecture since 1946
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MINISTRY OF EDUCATION

TARADALE SCHOOL
POOL CHANGING ROOM
IMPROVEMENTS

ELEVATIONS

Scale:	Date:	Drawn:
1:100	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP05	

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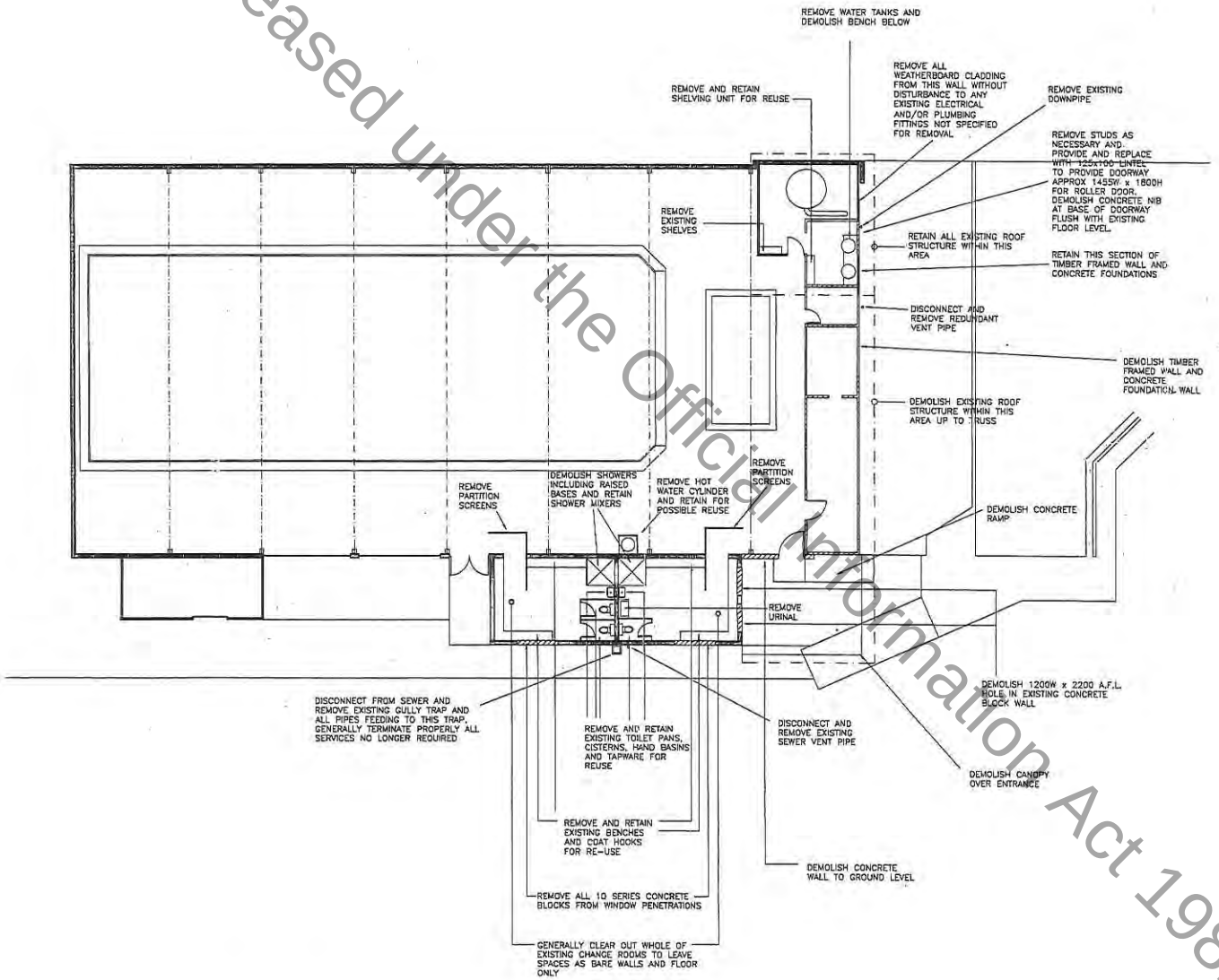

DEMOLITION WORK:

Generally includes all preparatory work noted on this drawing, and any other work necessary to enable new work in accordance with the accompanying drawings.

Allow to make good all surrounding area where affected by demolition work.

Demolition work shall only be carried out at times to suit the occupants – take all precautions to protect surrounding surfaces/ areas/ occupants /etc. from dust, damage, etc.

All demolition material shall be removed from site – confirm with owner as to what they may wish to retain before removal from site.

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MINISTRY OF EDUCATION

TARADALE SCHOOL
POOL CHANGING ROOM
IMPROVEMENTS

DEMOLITION PLAN

Scale:	Date:	Drawn:
1:100	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP02	

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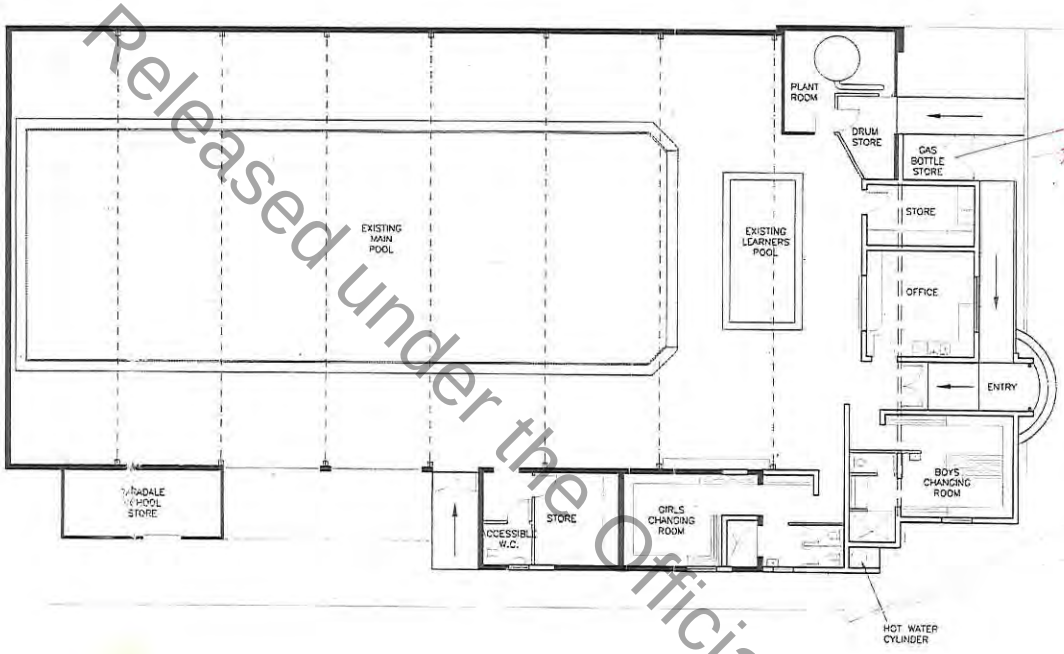


TARADALE SCHOOL
SWIMMING POOL
General Layout New Plan

Scale 1:100

GENERALLY:

Contractor / Sub Contractor shall familiarise themselves with all drawings of this set.

All work shall comply with the N.Z. Building Code, N.Z.S. 3604, N.Z.S. 4229, and all other relevant Regulations and Standards.

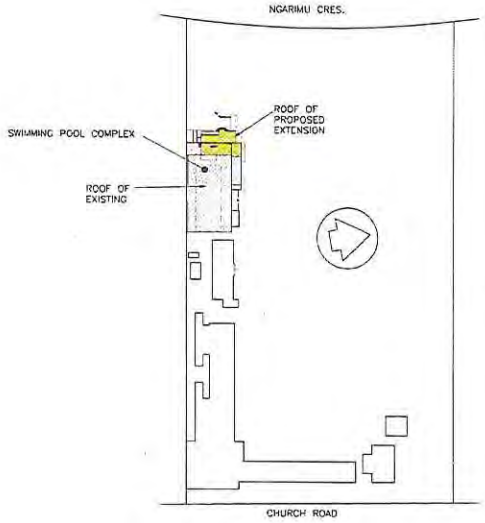
During the tendering period, Contractors & Sub Contractors shall have thoroughly availed themselves of the premises. Allow for all work necessary to properly upgrade and complete, and to leave the whole facility operable, clean and ready for use.

Working area shall be confined to the site only.

All work of all trades shall be best practice and best materials.

Allow to make good all existing surfaces and finishes to leave in 'as new' condition.

Upon completion allow to thoroughly clean, vacuum, polish, etc. all interior surfaces, and exterior (where applicable). Remove all labels. Remove all debris, etc.



SITE LOCATION PLAN
Taradale Primary School

Scale 1:1000

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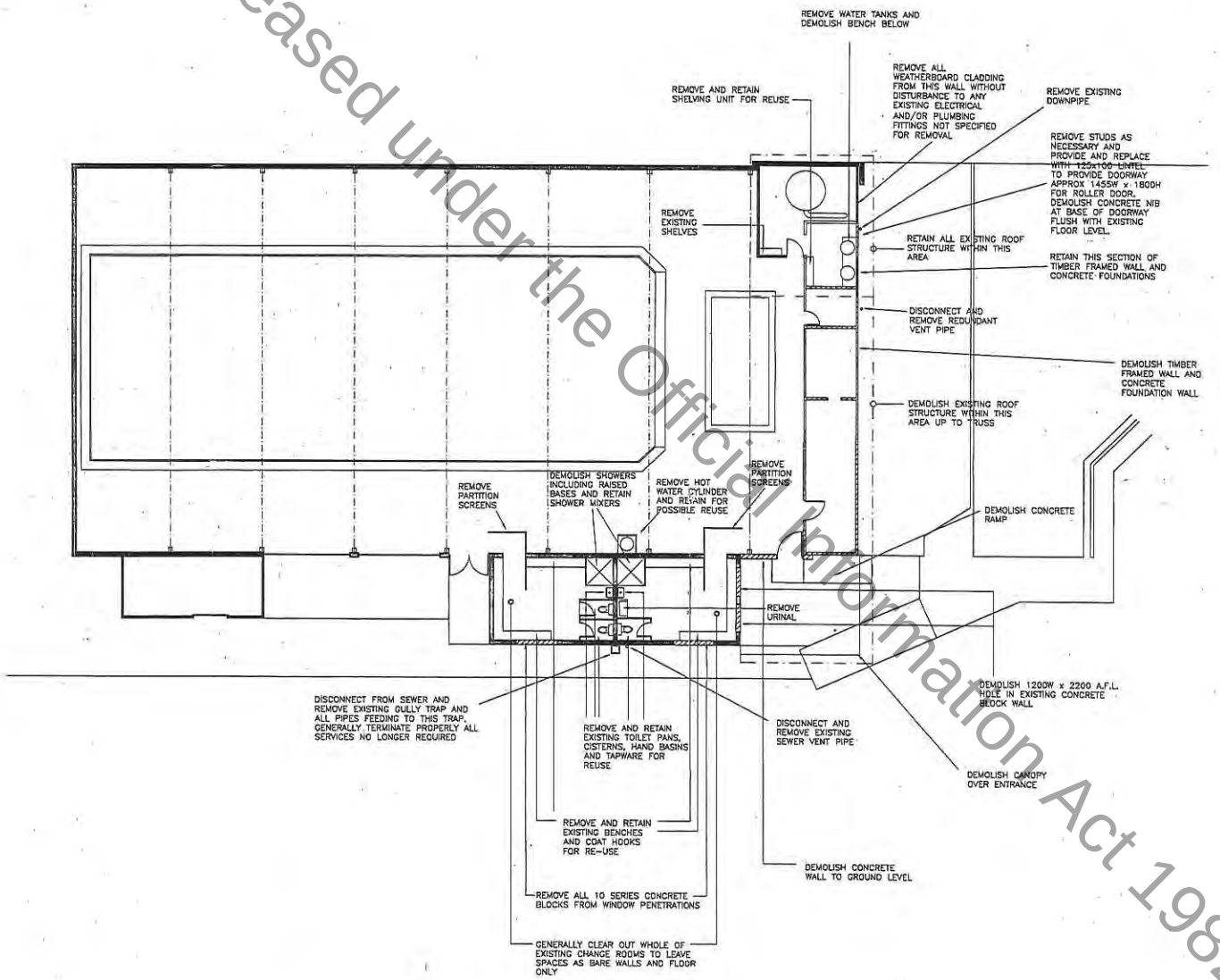
MINISTRY OF EDUCATION

TARADALE SCHOOL
POOL CHANGING ROOM
IMPROVEMENTS

SITE LOCATION
AND GENERAL
PLAN

Scale:	Date:	Drawn:
A/S	26/3/98	PTL
Job:	No:	Rev:
9754	GATSP01	

4



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MINISTRY OF EDUCATION

TARADALE SCHOOL
POOL CHANGING ROOM
IMPROVEMENTS

DEMOLITION PLAN

Scale:	Date:	Drawn:
1:100	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP02	

CARPENTRY GENERALLY:

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Obtain and install all structural steelwork and other metalwork as noted and/or as necessary to complete the work.

Provide scotia/ skirting/ architraves to match existing.

All timber framing to be kiln dried tar #1 or equal treatment.

MASONRY:

All masonry construction shall comply with NZS 4210. Masonry units shall be 200 series blocks complying with AS/NZS 4455. All cells to be filled with grout. Cleanout all loose mortar and debris from block cavities prior to grouting.

NEW WALLS:

Generally to match existing. Provide scotia/skirting/architraves and all other trim required to match existing.

Key to walls:

- NEW CONCRETE BLOCK WALLS
- NEW TIMBER FRAMED WALLS
- EXISTING WALLS

NOTES:

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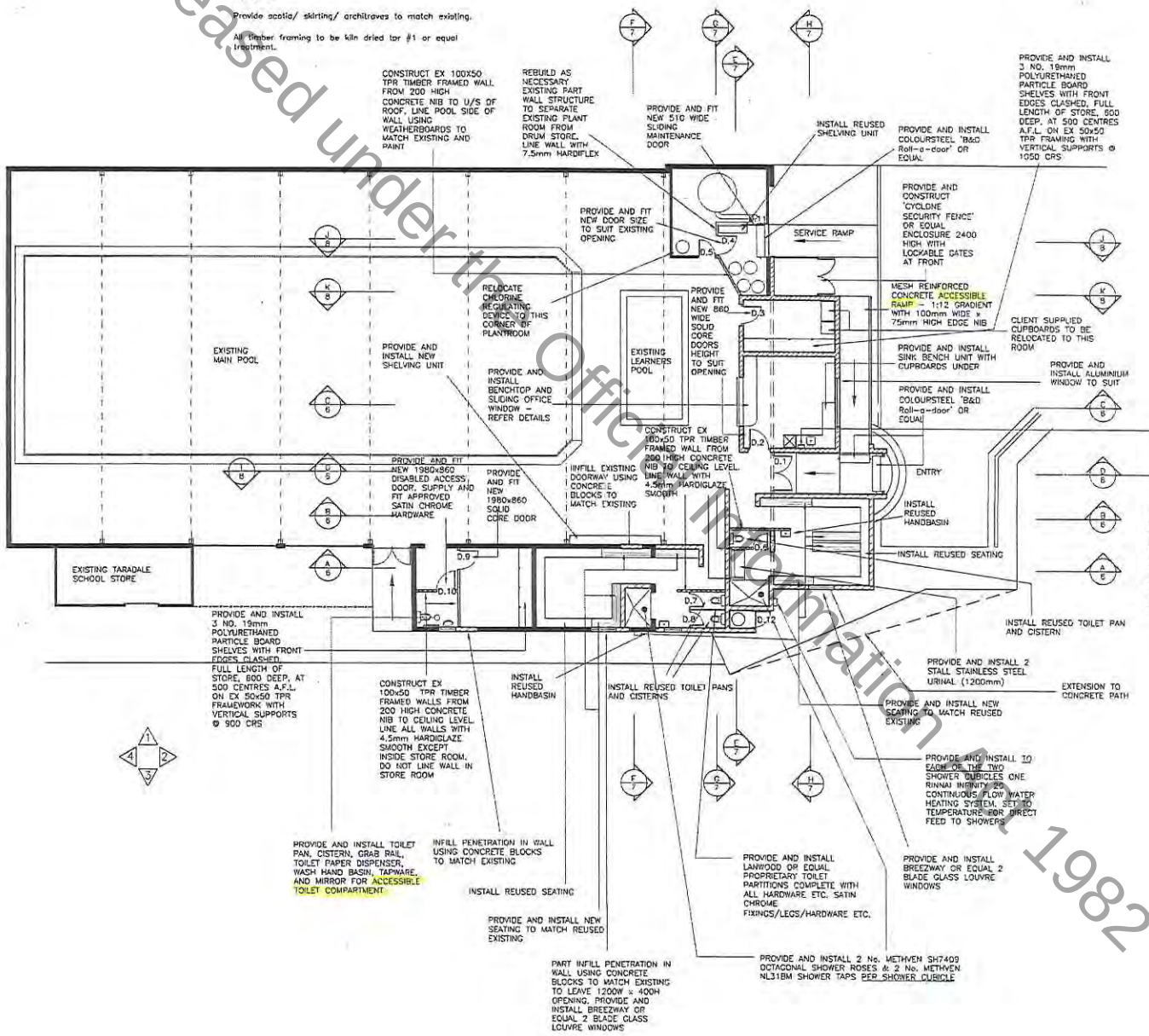

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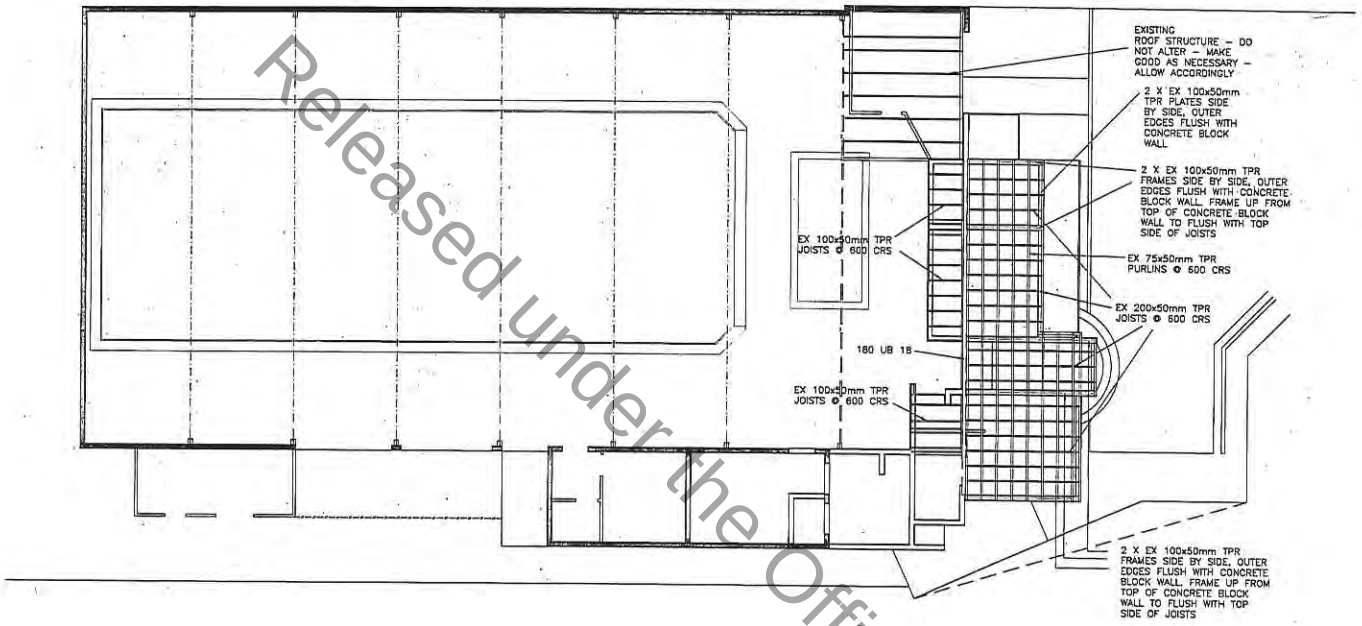
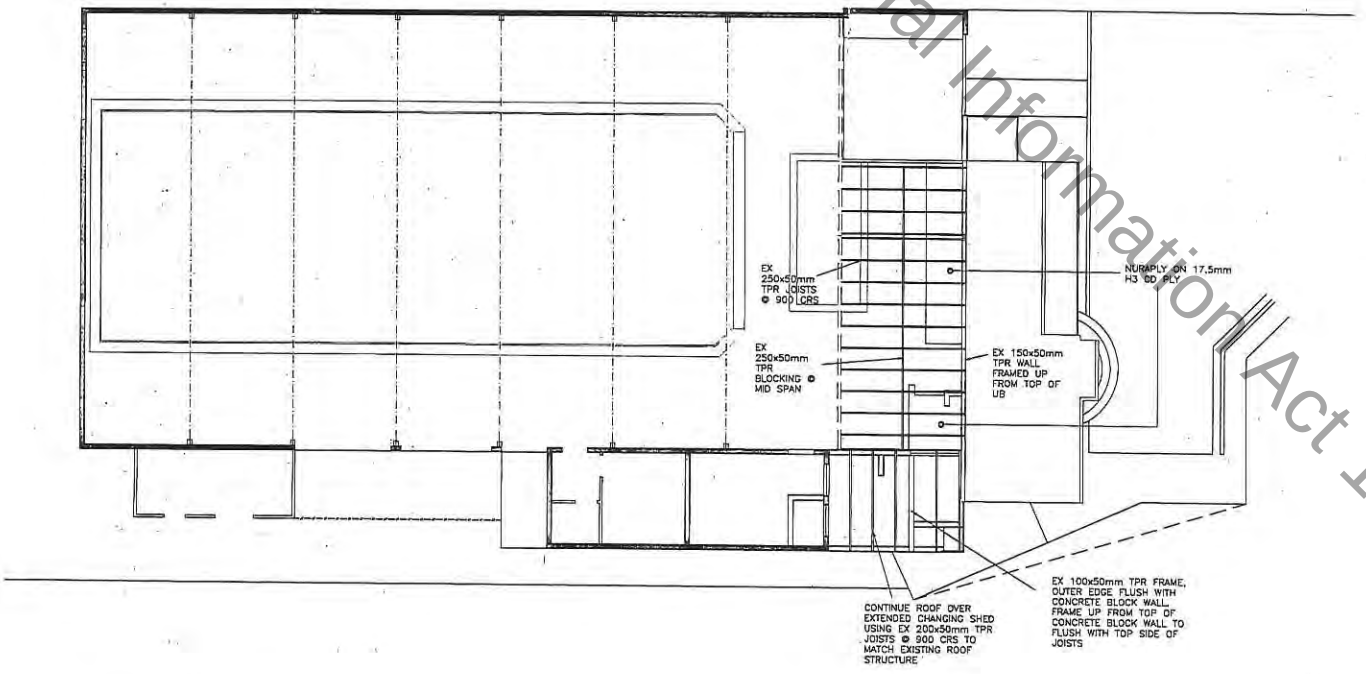
MINISTRY OF EDUCATION

TARADALE SCHOOL POOL CHANGING ROOM IMPROVEMENTS

KEY PLAN

Scale:	Date:	Drawn:
1:100	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP03	





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CARPENTRY GENERALLY:

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Obtain and install all structural steelwork and other metalwork as noted and/or as necessary to complete the work.

Provide scotia/ skirting/ architraves to match existing.

All timber framing to be kiln dried tpr #1 or equal treatment.

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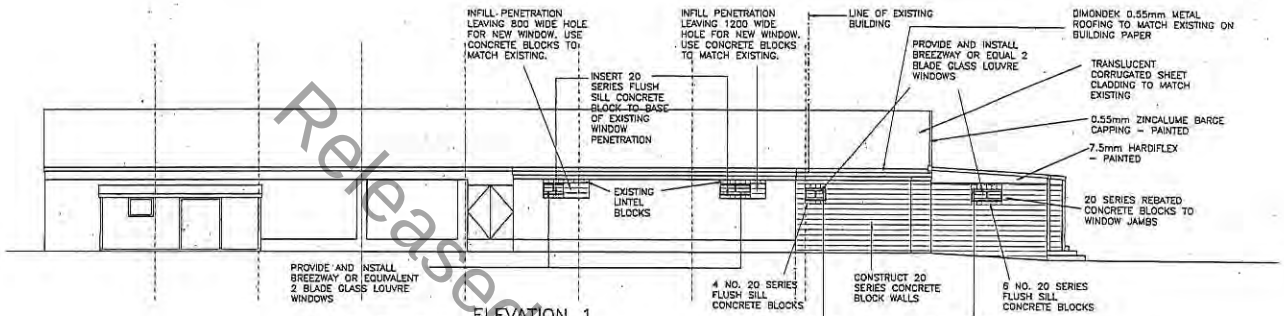
MINISTRY OF EDUCATION

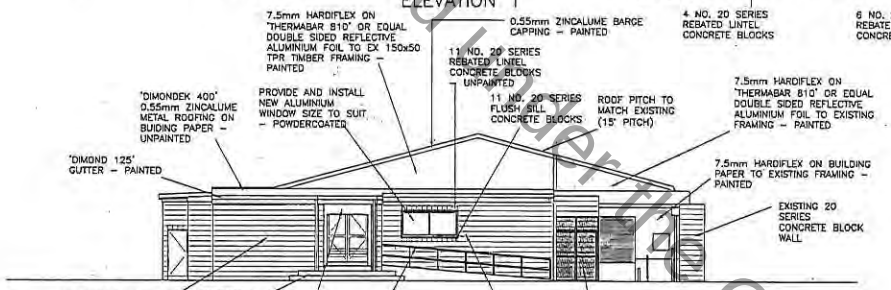
TARADALE SCHOOL POOL CHANGING ROOM IMPROVEMENTS

ROOF FRAMING PLAN

Scale:	Date:	Drawn:
1:100	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP04	



ELEVATION 1



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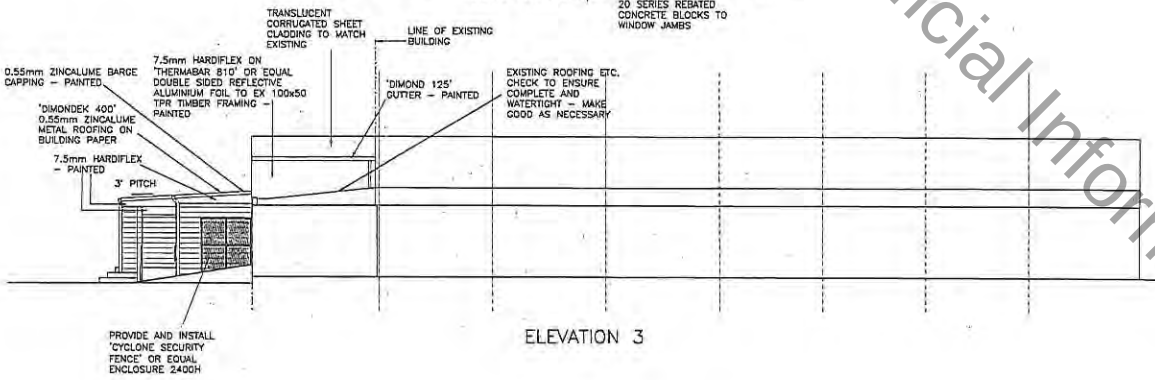

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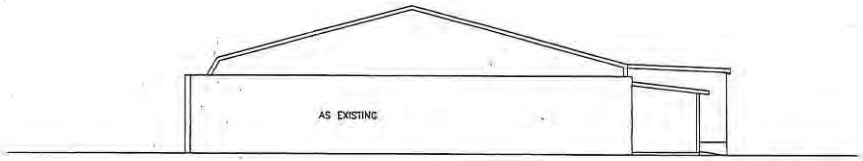

ELEVATION 2

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Provide scotia/ skirting/ architraves to match existing.

All timber framing to be kiln dried tpr #1 or equal treatment.

MASONRY:

All masonry construction shall comply with NZS 4210. Masonry units shall be 200 series blocks complying with AS/NZS 4455. All cells to be filled with grout. Cleanout all loose mortar and debris from block cavities prior to grouting.

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Showers – paint walls inside showers using one coat of Dulux Supereal followed by two coats Dulux Super Enamel. Paint floors using Dulux Durepave Truegrip with non-slip finish. All concrete surfaces to be prepared and painted by painting contractor in accordance with paint manufacturers instructions.

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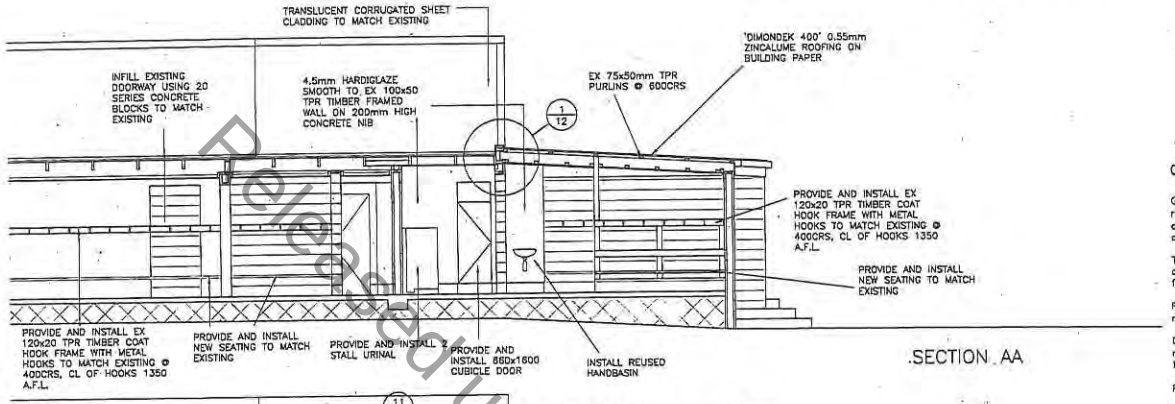
MINISTRY OF EDUCATION

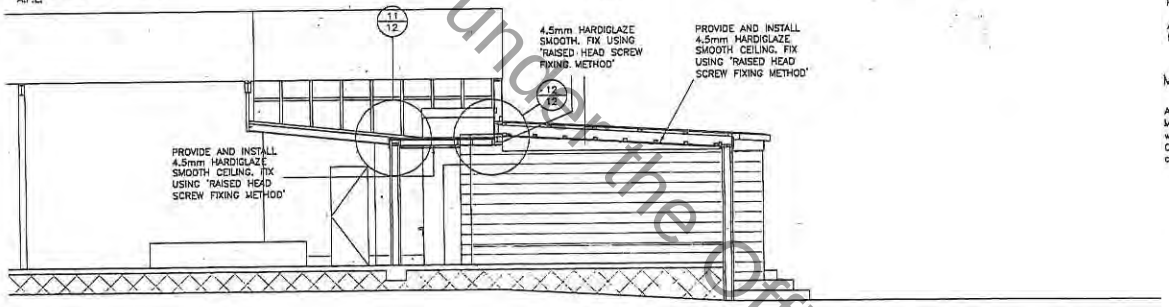
TARADALE SCHOOL POOL CHANGING ROOM IMPROVEMENTS

ELEVATIONS

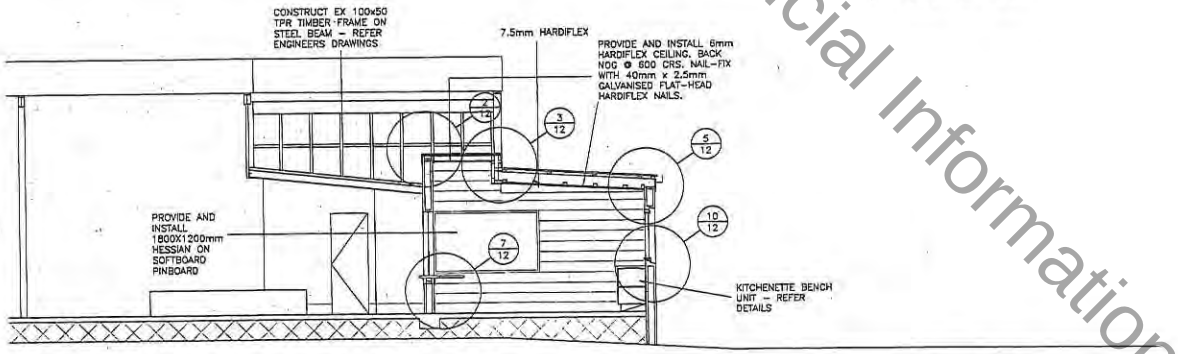
Scale:	Date:	Drawn:
1:100	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP05	



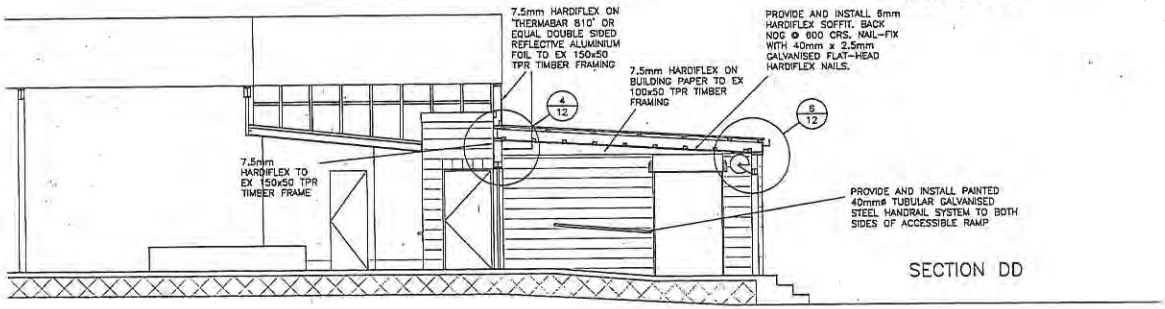
SECTION AA



SECTION BB



SECTION CC



SECTION DD

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Provide scotia/ skirting/ architraves to match existing.

All timber framing to be kiln dried tpr #1 or equal treatment.

MASONRY:

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MINISTRY OF EDUCATION

TARADALE SCHOOL POOL CHANGING ROOM IMPROVEMENTS

SECTIONS 1

Scale:	Date:	Drawn:
1:50	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP06	

CARPENTRY GENERALLY:

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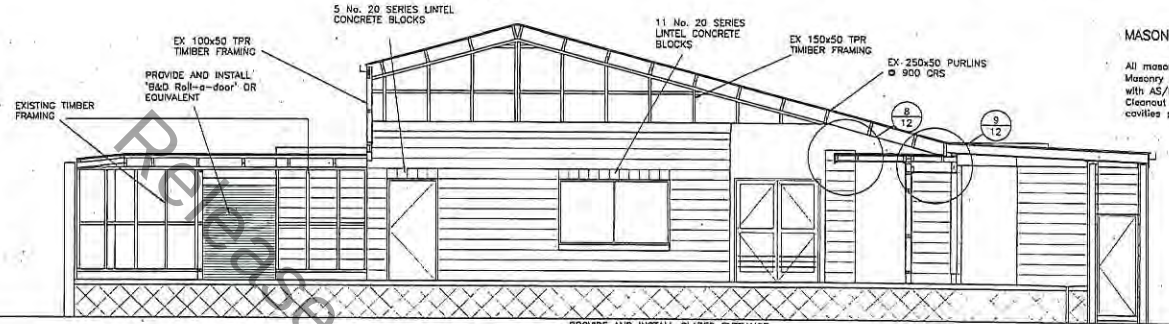

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FINISHES GENERALLY:

Trim – generally new scotia/ skirtings/ door frames and other required trim shall be painted to colour specified by client.

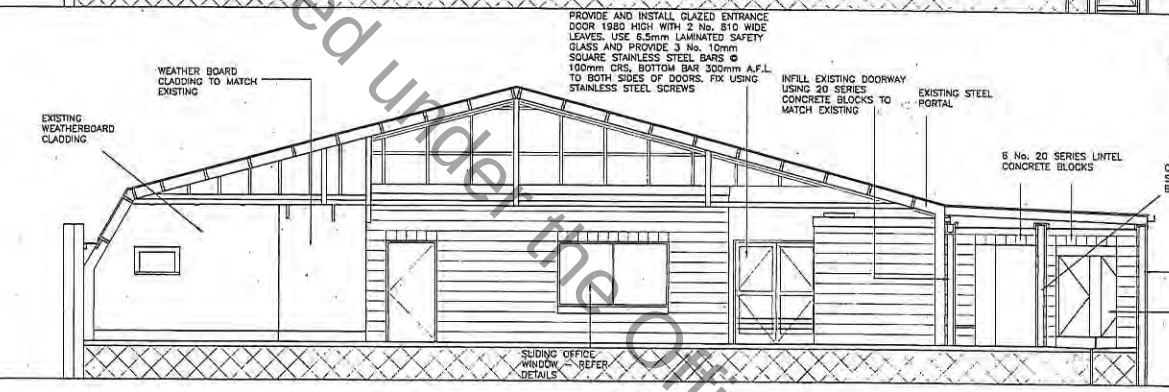
Allow to paint/ repaint all Hardiflex surfaces, all new timber surfaces including all new weatherboards, all timber doors, all door jambs,all new and reused timber in changing rooms, all timber architraves, skirting, and trim, but excluding exposed structural timber. Doors to be painted both sides.

Paint Finish – All new work shall have one primer/sealer undercoat and minimum of two top coats. All existing work made good shall be sanded, primer/undercoat where necessary, and have two top coats, to leave any made good surfaces in 'as new' condition. Finishing shall be brush or spray application for smooth, even, high level of finish especially to doors. All holes etc. to be stopped & filled. Careful sanding between all coats. Brush marks/ streaks NOT ACCEPTABLE. Painter shall use premium line paints only!

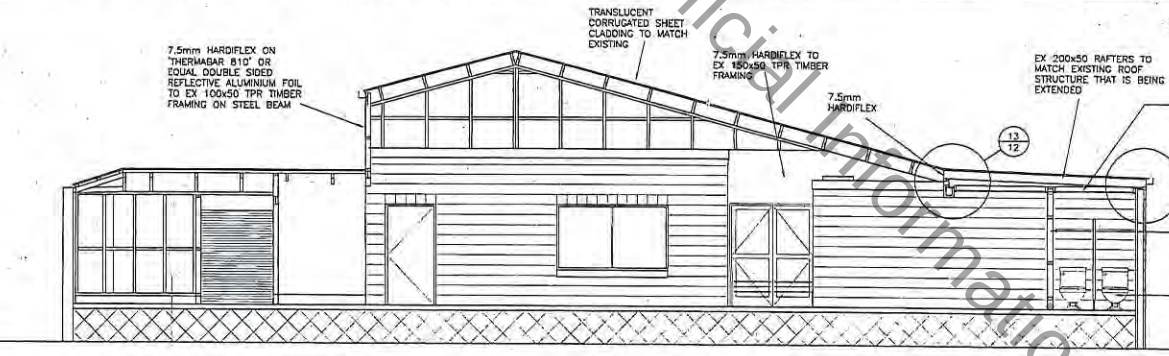
Hardiglaze – All Hardiglaze must be fixed as specified in the manufacturer's instructions 'James Hardie Technical Information – Hardiglaze', dated August 1996. Fix Hardiglaze in accordance with fixing instructions indicated in this set of drawings. Use PVC jointers between sheets.

Hardiflex – All Hardiflex must be fixed as specified in the manufacturer's instructions 'James Hardie Technical Information – Hardiflex', dated February 1996. Fix Hardiflex to areas specified in these drawings using 40mm x 2.5mm galvanised flat-head Hardiflex nails. Use PVC jointers between sheets, filled with paintable silicone sealant in external applications. Paint all Hardiflex with a minimum of one primer/sealer undercoat and two site coats of premium line acrylic paint.

Showers – paint walls inside showers using one coat of Dulux Supersael followed by two coats Dulux Super Enamel. Paint floors using Dulux Durapave Truegrip with non-slip finish. All concrete surfaces to be prepared and painted by painting contractor in accordance with paint manufacturers instructions.



SECTION EE



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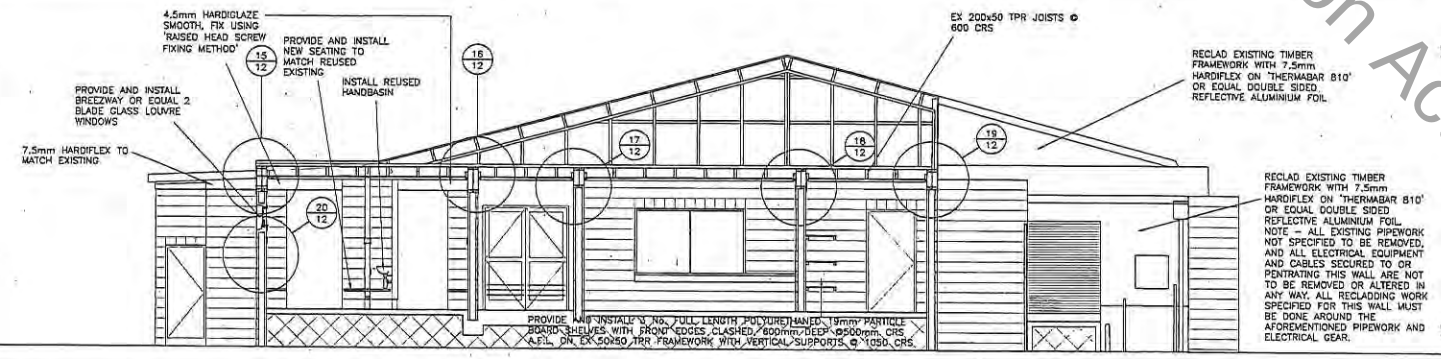

SECTION GG

SECTION HH

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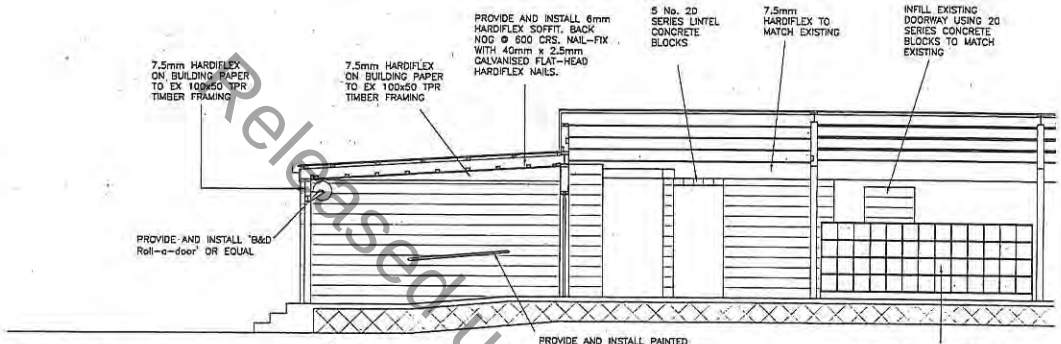
MINISTRY OF EDUCATION

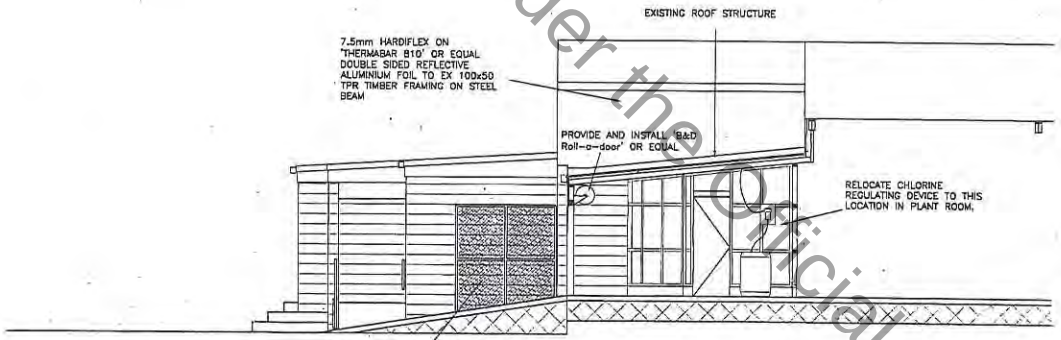
TARADALE SCHOOL POOL CHANGING ROOM IMPROVEMENTS

SECTIONS 2

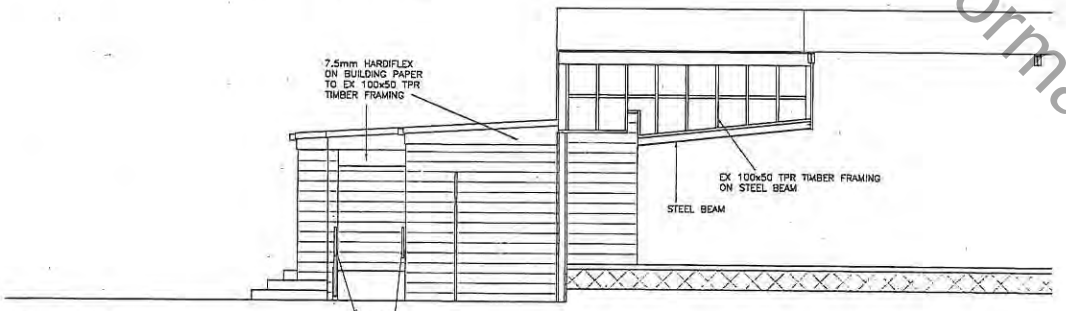
Scale:	Date:	Drawn:
1:50	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP07	



SECTION II



SECTION JJ



SECTION KK

CARPENTRY GENERALLY:

Generally all framing, linings, finishing, trim, insulation, remedial work, and other work as described and detailed hereon and/or as otherwise necessary to fully complete the work.

Take delivery of & install all joinery units, steelwork, door units, and other items as described elsewhere for supply by others and installation by contractor.

Provide all back nogs, blocking, and other support required for hardware/ joinery/ etc.

Obtain and install all structural steelwork and other metalwork as noted and/or as necessary to complete the work.

Provide scotia/ skirting/ architraves to match existing.

All timber framing to be kiln dried tpr #1 or equal treatment.

MASONRY:

All masonry construction shall comply with NZS 4210. Masonry units shall be 200 series blocks complying with AS/NZS 4455. All cells to be filled with grout. Cleanout all loose mortar and debris from block cavities prior to grouting.

NOTES:

These drawings are to be read in conjunction with the specifications.

Use figured dimensions only.

Contractor to verify dimensions prior to commencement of work.

Any doubt, ambiguity or omission or any part of the drawing or the specifications shall be referred to the Architect for clarification.

Submit shop drawings of all assemblies for review before manufacture.

FINISHES GENERALLY:

Trim – generally new scotia/ skirtings/ door frames and other required trim shall be painted to colour specified by client.

Allow to paint/ repaint all Hardiflex surfaces, all new timber surfaces including all new weatherboards, all timber doors, all door jambs,all new and reused timber in changing rooms, all timber architraves, skirting, and trim, but excluding exposed structural timber. Doors to be painted both sides.

Paint Finish – All new work shall have one primer/sealer undercoat and minimum of two top coats. All existing work made good shall be sanded, primer/undercoat where necessary, and have two top coats, to leave any made good surfaces in 'as new' condition. Finishing shall be brush or spray application for smooth, even, high level of finish especially to doors. All holes etc. to be stopped &c filled. Careful sanding between all coats. Brush marks/ streaks NOT ACCEPTABLE. Painter shall use premium line paints only!

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Showers – paint walls inside showers using one coat of Dulux Supersael followed by two coats Dulux Super Enamel. Paint floors using Dulux Durapave Truegrip with non-slip finish. All concrete surfaces to be prepared and painted by painting contractor in accordance with paint manufacturers instructions.

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MINISTRY OF EDUCATION

TARADALE SCHOOL
POOL CHANGING ROOM IMPROVEMENTS

SECTIONS 3

Scale:	Date:	Drawn:
1:50	13/3/98	PTL
Job:	No:	Rev:
9754	GATSP08	

ELECTRICAL WORK GENERALLY:

Switchboard

Confirm adequacy of mains supply to suit new electrical fit-out.

Re-arrange board to suit new electrical layout including adjustment of circuits for power/lighting/etc. as noted.

Generally wire to all new fittings/outlets/etc. as necessary to make fully operational.

All wiring to be concealed where possible. Suface mounting of wiring to fittings/outlets etc located on concrete block walls is acceptable only if the wiring is concealed in electrical conduit. All electrical conduit work must be installed in neat and tidy fashion with all exposed conduit running in vertical or horizontal directions only. All changes in conduit direction must be formed using proper elbow connections. Conduit surface mounted at an angle on walls, or laid out in a free-form curve WILL NOT BE ACCEPTED.

All new electrical fittings including lights, 'Zip' boiling water unit, switches, general power outlets, wiring, etc. to be provided by Contractor/ Sub Contractor. Allow to take delivery of all fittings and related componentry and install in accordance with suppliers instructions for correct and proper installation.

ELECTRICAL WORK (cont):

Provide all switching as noted. Make good all terminated existing light switches. All new switches to be of waterproof type.

Make good & operable all existing fittings in present or new locations.

Main contractor and electrician to allow to co-ordinate for concurrent installation. Provide all assistance as required. Painting contractor to allow for painting all exposed electrical conduit.

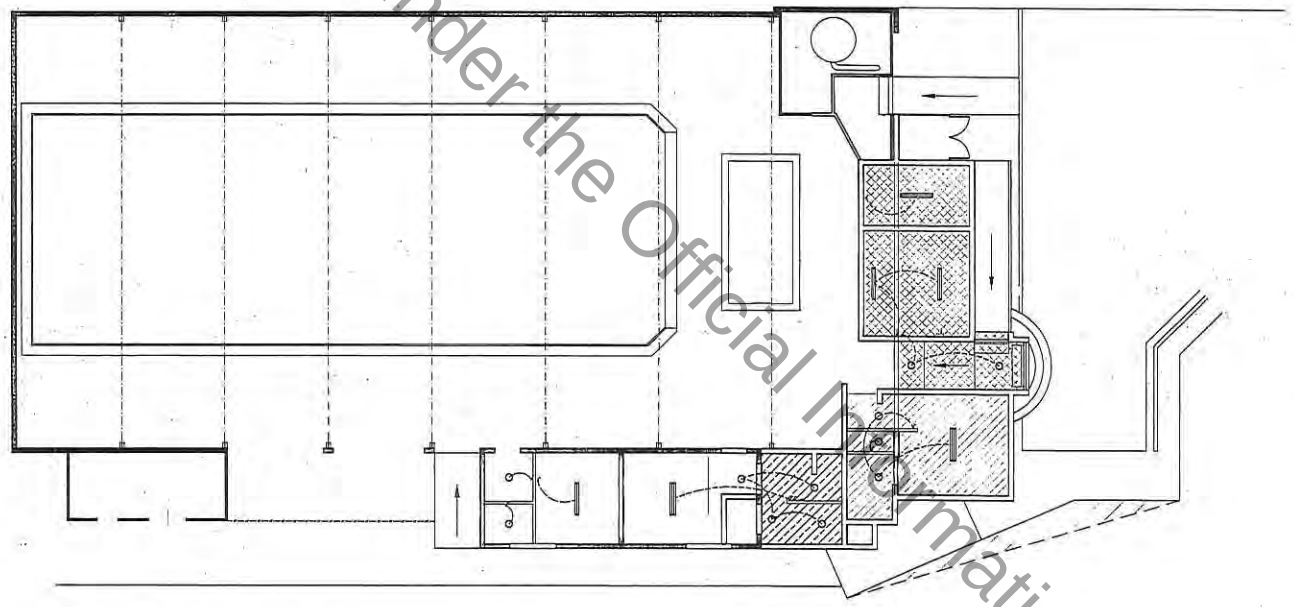
Making Good/Concealment

Contractor shall allow as necessary for all cutting open and making good to ensure complete concealment of all electrical work/ cabling/ wiring for all systems/etc. wherever possible.

CEILINGS:

Hardiglaze – All Hardiglaze must be fixed as specified in the manufacturer's instructions 'James Hardie Technical Information – Hardiglaze', dated August 1996. Fix Hardiglaze in accordance with fixing instructions indicated in this set of drawings. Use PVC jointers between sheets.

Hardiflex – All Hardiflex must be fixed as specified in the manufacturer's instructions 'James Hardie Technical Information – Hardiflex', dated February 1996. Fix Hardiflex to areas specified in these drawings using 40mm x 2.5mm galvanised flat-head Hardiflex nails. Use PVC jointers between sheets, filled with paintable silicone sealant in external applications. Paint all Hardiflex with a minimum of one primer/sealer undercoat and two site coats of premium fine acrylic paint.



NOTES:

These drawings are to be read in conjunction with the specifications.

Use figured dimensions only.

Contractor to verify dimensions prior to commencement of work.

Any doubt, ambiguity or omission of any part of the drawing or the specifications shall be referred to the Architect for clarification.

Submit shop drawings of all assemblies for review before manufacture.

KEY TO ELECTRICAL WORK:

Provide and install the following electrical fittings. Also provide and install all electrical accessories including wire, switches and fuses where necessary.

- DOUBLE GENERAL POWER OUTLET
- WATERPROOF ONE WAY LIGHT SWITCH
- VANDAL RESISTANT WATERPROOF FLUORESCENT LIGHT FITTING WITH 21W 2D LAMP
- VANDAL RESISTANT WATERPROOF SINGLE TUBE FLUORESCENT LIGHT FITTING
- VANDAL RESISTANT WATERPROOF DOUBLE TUBE FLUORESCENT LIGHT FITTING
- NEW WIRING TO BE INSTALLED

KEY TO CEILINGS:

Provide and install the following ceilings and all battening that may be required to install the ceilings in accordance with the instructions in this set of drawings, and in accordance with manufacturers instructions.

- 4.5mm HARDIGLAZE SMOOTH. FIX USING 'RAISED HEAD SCREW FIXING METHOD'
- 4.5mm HARDIGLAZE SWIRL TO MATCH EXISTING. FIX USING 'RAISED HEAD SCREW FIXING METHOD'
- 6mm HARDIFLEX – PAINTED FINISH

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MINISTRY OF EDUCATION

TARADALE SCHOOL
POOL CHANGING ROOM
IMPROVEMENTS

REFLECTED CEILING AND ELECTRICAL PLANS

Scale:	Date:	Drawn:
1:100	23/3/98	PTL
Job:	No:	Rev:
9754	GATSP09	

PLUMBING & DRAINAGE NOTES:

Generally all work necessary to provide cold water to one new & two relocated wash hand basins, one new & three reused toilet pans & cisterns, one new urinal and cistern, one new 'Zip' boiling water unit, one new kitchenette sink, & two new 'Rinnai Infinity' hot water systems, and hot water, from 'Rinnai' heaters to four new shower heads, & from 'Zip' unit to kitchenette sink, all in conjunction with existing plumbing and drainage, and all plumbing requirements as noted on the drawings.

Provide cold water from existing facilities, and hot water to the showers from new 'Rinnai' heaters and to the kitchenette sink from the 'Zip' water heater. Conceal water pipes by recessing into walls or ceiling spaces where possible, or by setting into slab floor, otherwise surface mount on walls in neat and tidy fashion with all exposed pipework running in vertical or horizontal directions only. All changes in pipework direction must be formed using elbow connections. Pipework surface mounted at an angle on walls, or laid out in a free-form curve WILL NOT BE ACCEPTED.

The contractor/sub-contractor shall carry out all drainage work necessary to provide the new gully traps as indicated on this drawing, and to carry out all drainage work as indicated and as necessary to discharge wastewater from these gully traps into existing sewer drain.

NOTES:

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Use figured dimensions only.

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PLUMBING & DRAINAGE NOTES (cont):

The contractor/sub-contractor shall carry out all drainage work as necessary to discharge wastewater from showers, all w.h.b.'s, and kitchenette sink into new gully traps. Conceal wastewater pipes where possible by setting in the concrete slab floor, otherwise by architects instruction on site.

Showers

Showers are to be fitted with W1000 series Gatic floor wastes with round nickel bronze tops. Existing concrete floor in girls shower must be scabbled to provide acceptable fall to waste. Penetration through concrete slab in this shower shall be achieved by jack hammering of the penetration and exposing the reinforcing steel. Break away concrete to provide sufficient diameter for all pipes to pass through the concrete slab, and jack hammer and break away groove as necessary for waste pipe to pass from floor waste, through existing slab, as indicated on this drawing. Waste pipes shall be set and secured in their final position as specified and wrapped with one layer of Denso tape for the full thickness of the slab. The contractor shall, once the waste pipes are in their final location, form up on the underside and back load the broken out slab against the new waste pipe. The floor to this shower must then be plastered over to make good and floor levelling compound applied to provide acceptable fall to drain. Shower in boys changing room to similarly receive Gatic floor waste, but this is to be installed and fitted in its final position prior to laying of the floor slab in this area. Acceptable fall to be provided in this shower by trowelling of the concrete, and finishing with floor levelling compound where necessary.

Remove 1 No. hot water cylinder not required & hand to owner.

Remove 2 No. shower head and mixer units & hand to owner.

Relocate 2 No. existing wash hand basins and taps.

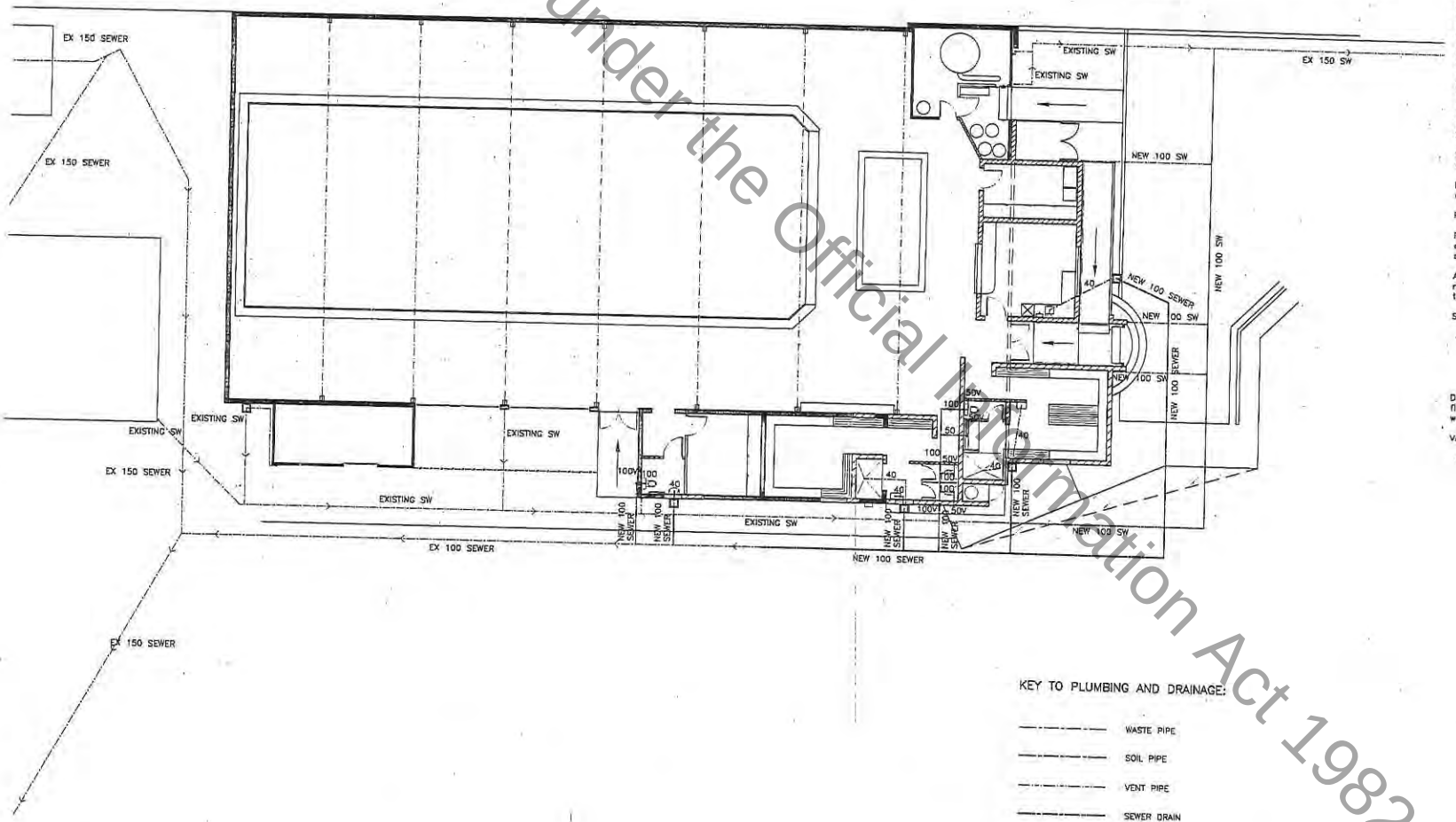
Relocate 3 No. toilet pans and cisterns. Disconnect existing soil pipe connections serving these toilets & seal over.

All work in accordance with N.Z. Building Code & T.A. requirements including requirements for disabled access toilets.

Stormwater – Three new downpipes from new roof at front of pool complex. The contractor-sub/contractor shall carry out all drainage work as necessary to discharge stormwater from new downpipes into existing stormwater pipe.

Details are schematic only and indicate an intention. The final routing and connection point of all soil pipes, wastes and vents shall be agreed upon on site.

Vents – vents are to be concealed within internal timber framed walls where possible, otherwise mounted on the exterior of the building according to architects instruction on site.



KEY TO PLUMBING AND DRAINAGE:

- WASTE PIPE
- SOIL PIPE
- VENT PIPE
- SEWER DRAIN
- STORMWATER

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MINISTRY OF EDUCATION

TARADALE SCHOOL
POOL CHANGING ROOM
IMPROVEMENTS

PLUMBING AND
DRAINAGE PLAN

Scale:	Date:	Drawn:
1:100	26/3/98	PTL
Job:	No:	Rev:
9754	GATSP10	

NOTES:

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Use figured dimensions only.

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Submit shop drawings of all assemblies for review before manufacture.

CARPENTRY GENERALLY:

Generally all framing, linings, finishing, trim, insulation, remedial work, and other work as described and detailed hereon and/or as otherwise necessary to fully complete the work.

Take delivery of & install all joinery units, steelwork, door units, and other items as described elsewhere for supply by others and installation by contractor.

Provide all back nogs, blocking, and other support required for hardware/ joinery/ etc.

Obtain and install all structural steelwork and other metalwork as noted and/or as necessary to complete the work.

Provide scotia/ skirting/ architraves to match existing.

All timber framing to be kiln dried tpr #1 or equal treatment.

MASONRY:

All masonry construction shall comply with NZS 4210. Masonry units shall be 200 series blocks complying with AS/NZS 4455. All cells to be filled with grout. Cleanout all loose mortar and debris from block cavities prior to grouting.

IMPORTANT NOTE 1:

IN ORDER TO LAY OUT THE CONCRETE BLOCK STRUCTURE CONTAINING THE OFFICE AND STOREROOM, THE OUTER FACE OF THIS NEW CONCRETE BLOCK WALL MUST BE IN LINE WITH THE OUTSIDE FACE OF THE EXISTING CONCRETE BLOCK WALL THAT IS LOCATED AGAINST THE BOUNDARY. NOTE HOWEVER THAT THE LAYERING LEVELS OF THE CONCRETE BLOCKS MUST BE SET OUT AT THE SAME LEVEL AS THE BLOCKWORK FOR THE CHANGING ROOMS.

EXISTING CONCRETE BLOCK WALL

NOTE – THE WIDTH OF THIS ACCESSIBLE RAMP IS NOMINAL AND DETERMINED SOLELY BY THE LAYING OUT OF THE TWO SEPERATE CONCRETE BLOCK STRUCTURES USING THE GIVEN DIMENSIONS AND THE EXISTING CONCRETE BLOCK WORK THAT IS TO BE USED AS A DATUM FOR SETTING OUT.

NOTE – THE DISTANCE BETWEEN THE TWO WALLS OF THE ENTRANCEWAY IS NOMINAL AND DETERMINED SOLELY BY THE LAYING OUT OF THE TWO SEPERATE CONCRETE BLOCK STRUCTURES USING THE GIVEN DIMENSIONS AND THE EXISTING CONCRETE BLOCK WORK THAT IS TO BE USED AS A DATUM FOR SETTING OUT.

IMPORTANT NOTE 2:

IN ORDER TO LAY OUT THE CONCRETE BLOCK STRUCTURE CONTAINING THE CHANGING ROOMS, THE OUTER FACE OF THIS NEW CONCRETE BLOCK WALL MUST BE IN LINE WITH THE OUTSIDE FACE OF THE EXISTING CONCRETE BLOCK WALL THAT IS BEING BUTTED UP AGAINST. NOTE THAT THE CONCRETE BLOCK LAYER LEVELS ARE TO LINE UP AND MATCH THOSE OF THE EXISTING BLOCKWORK OF THE EXISTING CHANGING ROOMS.

IMPORTANT NOTE 3:

THE CENTRE LINE OF THIS WALL MUST BE LAID OUT IN LINE WITH THE CENTRE LINE OF THE STEEL BEAM, WHICH MUST BE POSITIONED IN LINE WITH THE CENTRE LINE OF THE BLOCK WALL POSITIONED OUTSIDE THE DRUM STORE. IT IS NOTED THAT THIS WALL OUTSIDE THE DRUM STORE IS THE WALL DESCRIBED IN 'IMPORTANT NOTE 1' AS BEING POSITIONED SO THAT THE OUTER FACE OF THE WALL IS IN LINE WITH THE OUTER FACE OF THE EXISTING CONCRETE BLOCK WALL.

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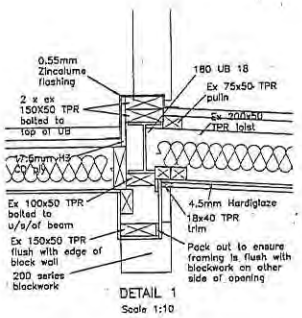
MINISTRY OF EDUCATION

TARADALE SCHOOL POOL CHANGING ROOM IMPROVEMENTS

DIMENSIONAL PLAN

Scale:	Date:	Drawn:
1:100	26/3/98	PTL
Job:	No:	Rev:
9754	GATSP11	



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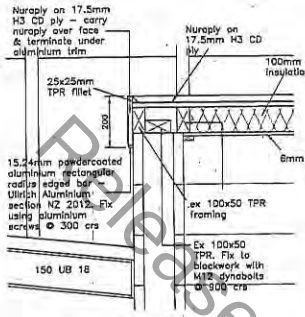

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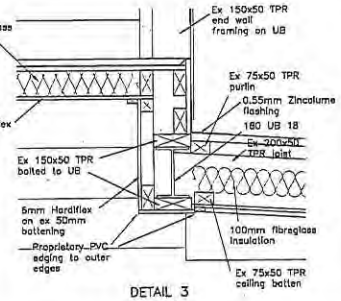

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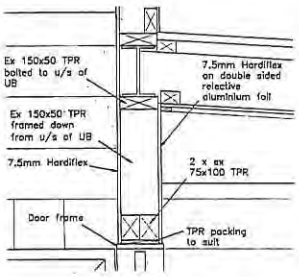

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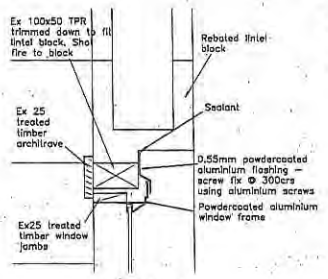

DETAIL 5
Scale 1:5

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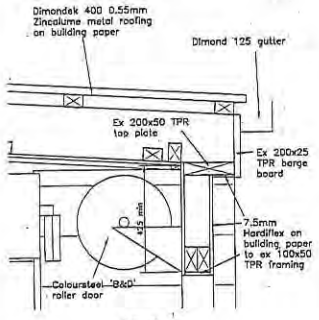

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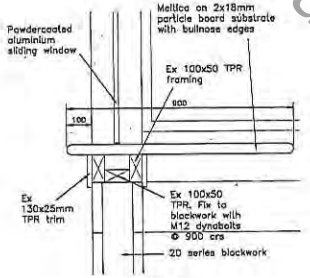

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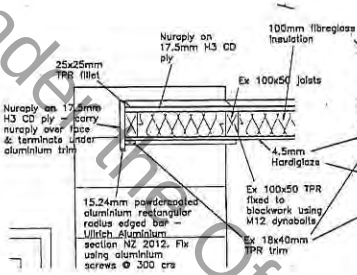

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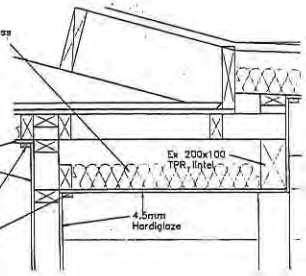

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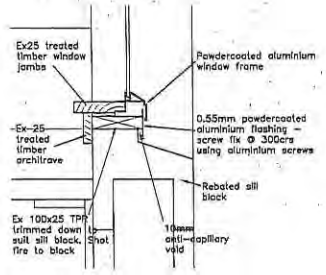

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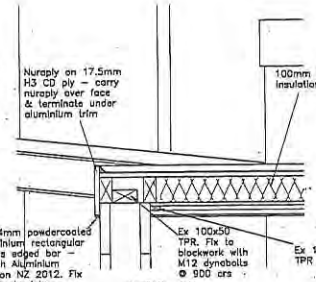

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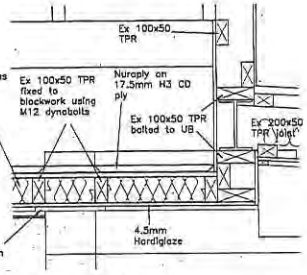

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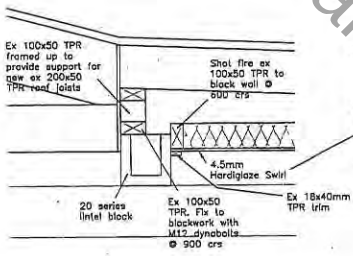

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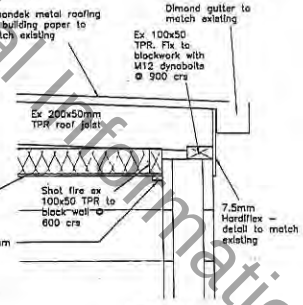

DETAIL 14
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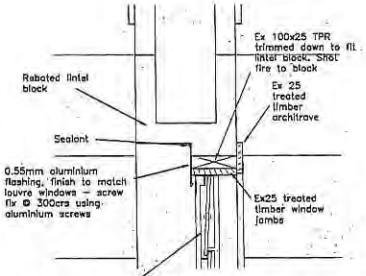
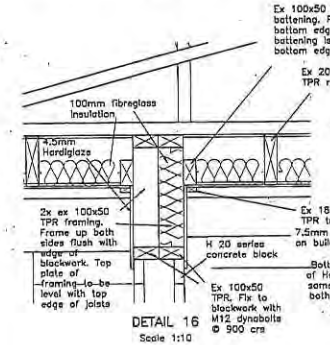
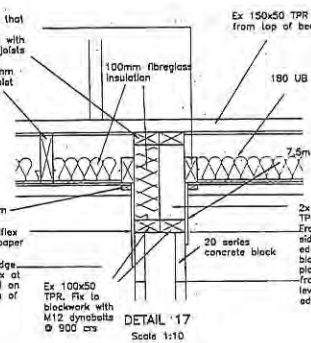


DETAIL 15
Scale 1:5



DETAIL 16
Scale 1:10



DETAIL 17
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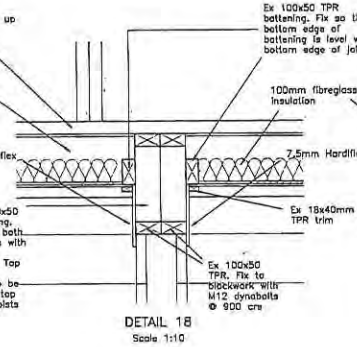

DETAIL 18
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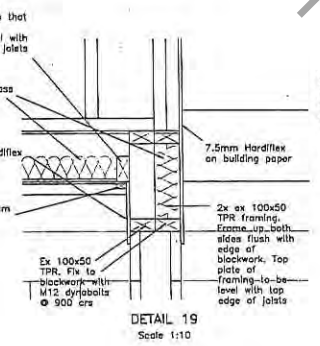
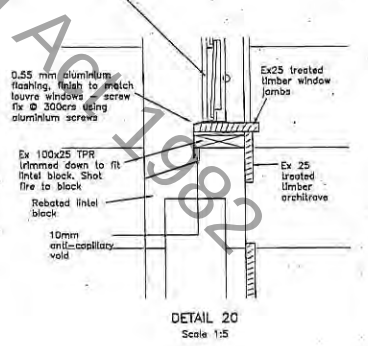


DETAIL 19
Scale 1:10



DETAIL 20
Scale 1:5

Architecture since 1864
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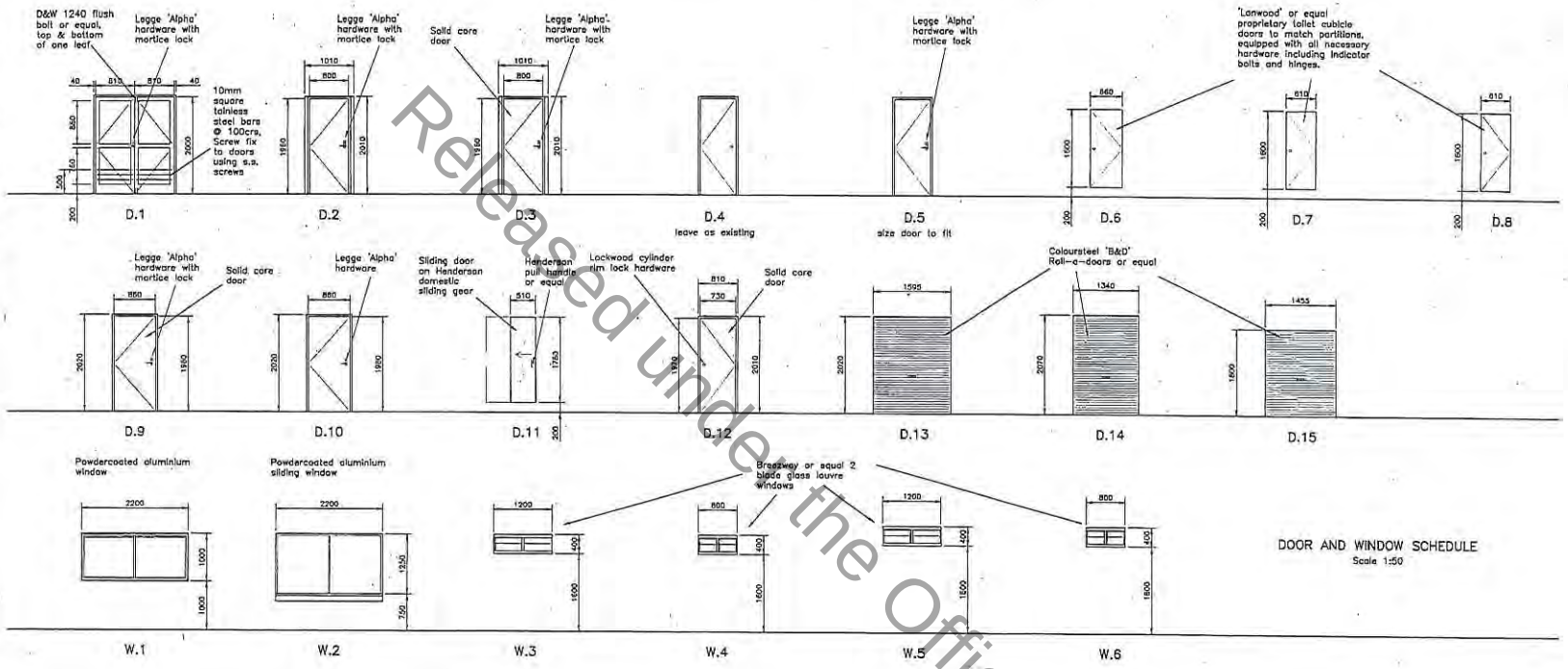
MINISTRY OF EDUCATION

TARADALE SCHOOL
POOL CHANGING ROOM IMPROVEMENTS

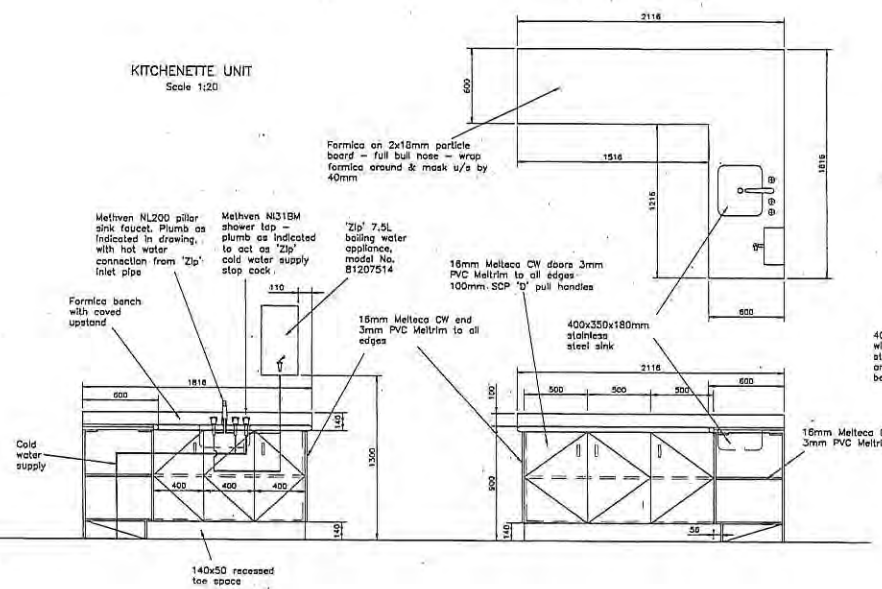
CONSTRUCTION DETAILS

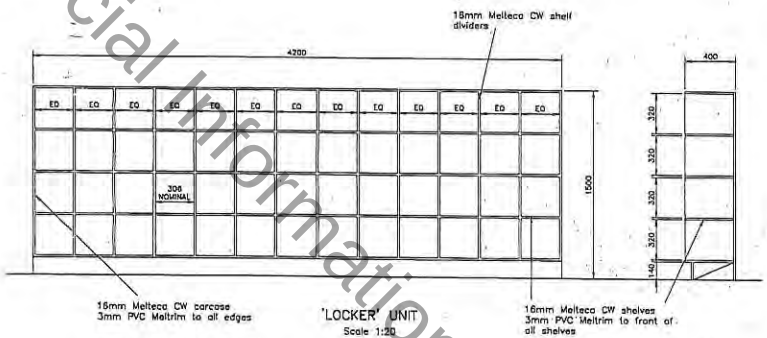
Scale:	Date:	Drawn:
A/S	30/3/98	PTL
Job:	No:	Rev:
9754	GATSP12	



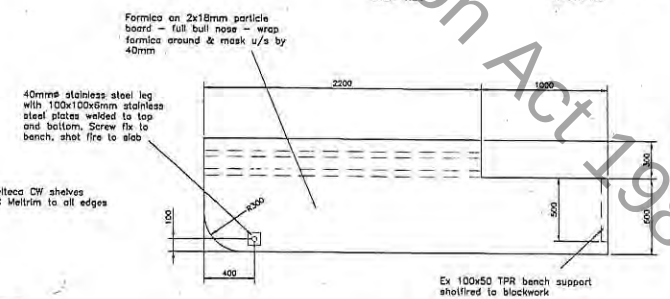
DOOR AND WINDOW SCHEDULE
Scale 1:50

KITCHENETTE UNIT
Scale 1:20





'LOCKER' UNIT
Scale 1:20



OFFICE COUNTER TOP
Scale 1:20

NOTES:

These drawings are to be read in conjunction with the specifications.

Use figured dimensions only.

Contractor to verify dimensions prior to commencement of work.

Any doubt, ambiguity or omission of any part of the drawing or the specifications shall be referred to the Architect for clarification.

Submit shop drawings of all assemblies for review before manufacture.

JOINERY:

Scope of work generally includes fabrication, finishing and installation of all joinery units noted on this drawing including:

Office – kitchenette cupboard unit complete with formica bench, stainless steel sink, and all hardware excepting tapware and associated plumbing.
– formica counter top, excepting stainless steel leg which is to be provided by contractor.

'Lockers' – poolside shelving unit

Provide all units to contractor for building in as required .

Carpenter shall provide and fit all trim to properly finish off.

Provide to contractor for building in:

1 No. 1980x860 solid core door in frame.
1 No. solid core door in frame, size to suit.
1 No. solid core exterior door in frame, size to suit.
3 No. hollow core doors in frames, sizes to suit.
1 No. hollow core sliding door, size to suit.
3 No. Lanwood or equal proprietary toilet cubicle doors sized to suit.
1 No. double leaf solid timber frame glazed door in frame.

Unless specified, all doors & frames to be sized to suit by measuring on site. Dimensions given on door and window schedules are indicative only, and must be checked on site prior to manufacture of doors.

Contractor to provide:

1 No. powdercoated aluminium window, size to suit.
1 No. powdercoated sliding aluminium window, size to suit
8 total (4 pairs) 'Breezway' or equal 2 blade glass louvre windows complete with multiple panel joinery.
3 No. Colorsteel 'B&D Roll-a-doors' or equal, size to suit.

All units shall be delivered prefinished and complete with all operational hardware; handles , etc. to leave fully operational and complete. All door hardware to have satin chrome finish.

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MINISTRY OF EDUCATION

TARADALE SCHOOL POOL CHANGING ROOM IMPROVEMENTS

WINDOW & DOOR SCHEDULES AND JOINERY

Scale:	Date:	Drawn:
A/S	31/3/98	PTL
Job:	No:	Rev:
9754	GATSP13	